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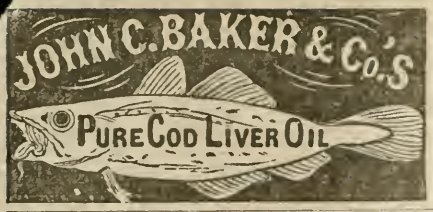

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PHILADELPHIA, AUGUST 5, 1876.

ORIGINAL COMMUNICATIONS.

A PLEA FOR THE REVIVAL OF THE USE OF THE SUTURE IN THE TREATMENT OF DIVIDED TENDONS.

BY CHARLES NANCREDE, M.D.,
Assistant Surgeon P. E. Hospital.

FOR all wounds or injuries of other portions of the human frame, methods of treatment appear in journals, text-books, etc., as "thick as autumn leaves that strow the brooks in Vallombrosa;" yet for a cut tendon the "expectant plan" seems to obtain with wonderful unanimity. After considerable research and observation of hospital practice, the utmost that I can discover is the admission that sutures *may* be used if deemed necessary. Now, such a weak endorsement of any plan of practice is like "the faint praise that damns." It is, therefore, rarely if ever done, and thus too often the unfortunate patient is left with a more or less useless member, which might have been useful.

I do not say that in every case of divided tendon treated by suture a perfect result will ensue, since the cicatrix of the skin and other tissues may interfere with the extent of motion; but I do maintain that the patient thus has given him the best possible chance, while by the usual "let-alone" plan everything is left to good luck. Any one who trusts to position, etc., to produce a good result unaided in a fractured patella, with marked separation of the fragments, would be held culpable, since there are so many more effectual means of retaining them in apposition; yet a similar plan when pursued for a traumatic division of a tendon meets with approval.

A comparatively slight separation of the patellar fragments, we know, often considerably weakens the power of the quadriceps, which moves a relatively clumsy portion of the body, so that some of the ablest surgeons have exhausted their skill and ingenuity in devising efficient plans of treatment. To be sure, time will generally remedy this in the case of the quadriceps, but more rarely in those accidents of which we are treating. Few, however, seem to perceive the paramount importance of preserving the perfect motion of the fingers, so apt to be impaired when the tendons attached to them are divided.

I think that there are few practitioners who have not seen some cases where several fingers or the whole hand have been rendered wholly or partially useless by a wound dividing the tendons. On reading this sentence, some doubtless recall cases of divided tendons which resulted in quite useful members when treated in the usual way. This is admitted; but so too when a plastic operation fails to unite by first intention we may have a surprisingly good result by careful management of the healing by granulation; yet surely no one from this exceptional result would advocate the latter mode of union.

Then, too, in the case either of the patella or of the plastic operation, we know that the one fragment of bone will unite with the other, or that skin will unite with skin, whereas, by position, plasters, etc., we may have coaptated the cut end of the tendon to muscle, or in a bad case even to skin or bone.

Another objection to the ordinary plan of treatment is the almost inevitable extensive union of the tendon with its sheath, and perhaps also with an extensive cicatrix of all the superimposed tissues. This might be obviated, certainly lessened, if we could speedily heal the divided ends and the opening in the sheath, thereby imitating as closely as possible the mode of union after tenotomy. Before proceeding further, let me state that of course I refer principally to those cases of divided tendons caused by an incised wound, such as is produced by a knife or a razor, or by thrusting the hand through a pane of glass.

I would not, however, entirely exclude from this plan of treatment even many of the lacerated wounds accompanied by cut tendons, for I consider them, in this connection, as similar to lacerated wounds of other tissues, where, if the vitality of the edges does not seem too much impaired, we endeavor by the closest attainable coaptation to lessen the gap, which must heal by granulation. Since in many wounds of other parts caused by blunt instruments the result so closely resembles that of an incised wound that we dress it as such, why not treat a similarly divided tendon on the same principles that guide us in other cases?

In fact, directly in the face of the results obtained by tenotomy, we refuse, as a rule, to give the tendon a chance to heal immediately, by coaptating its edges accurately, etc., although we must know that after this is done the wounded part often becomes practically subcutaneous by swelling or healing of the superimposed tissues. Who doubts that in a much severer injury, such as compound fracture, it is both right and feasible in certain cases to attempt to render the healing of the broken bone subcutaneous, by Sir Astley Cooper's method or any other that will effectually exclude air?

Permit me here to say that I do not for one instant claim as original the use of sutures for tendons, or that it is not occasionally done; but it certainly is not recognized as *the* proper method of treatment for such injuries. When we recall to mind the importance of a perfect hand to a mechanic or laboring-man, I do not think that any device calculated to restore it to its pristine condition can be overrated. I say the hand, since this kind of accident is most frequent and most important in this member. The few modern authors who mention the possible use of sutures, with but few exceptions, say that they are unadvisable, since their use entails too much irritation. This I have no doubt obtains if an ordinary hemp, silk, or even metal suture be used, which, of course, necessitates keeping the wound open for its extraction; but when used of proper materials this objection does not hold good. Besides, granting that there is some irritation, what does it signify, if the result obtained be worth it? On this ground we should be compelled to abandon the suture everywhere, for in all cases, being a foreign body, some irritation is produced by it. In most cases, even when the suture is of the worst material, by lessening the *time* and *extent* of the healing we in reality *lessen the amount of irritation*. I think also that the objection is exaggerated, just as it formerly was with regard to the peritoneum and stumps.

Nowadays no one hesitates to tie the bleeding vessels of the omentum with fine silk thread, or even the whole pedicle of an ovarian tumor with a stout ligature. Doubtless in any such case there is some increased irritation, but that is certainly far better than hemorrhage. I think it is so with a divided tendon; we may have increased irritation, but our result is better, and in most cases we will never hear of our stitches again, just as is true with peritoneal ligatures. By a few quotations I propose to show that many of the older writers considered sutures of tendons not only advisable in theory, but demonstrated their usefulness in practice. They considered the subject of sufficient importance to discuss their advisability, but were too often deterred by theoretical dread of tetanus, etc. Then, too, they were not aware that catgut or silk ligatures can be absorbed by the animal tissues, and that they can be used with impunity in such an irritable cavity as that of the peritoneum. Like so many other old surgical appliances, the sutures were unnecessarily large and clumsy, and were doubtless to blame for some of the evil consequences charged upon them; still, time having proved that the principle was correct, it is our business to perfect the practice.

Heister says that the neglect of this practice among the ancients is due to the saying of Hippocrates (Aph. 19, sec. vi., and Aph. 28, sec. vii.), that "a nerve or tendon being cut asunder can never grow or unite again afterwards." This gave them an aversion to the operation, inasmuch as a slight puncture in a tendon often excites the most grievous symptoms.* Still, there were some in the time of Galen who practised this, since he advises against it.† This advice was rigidly adhered to by most surgeons, and particularly by Ambrose Paré.‡

On the other hand, this operation was carefully considered and approved of by the Arabian Avicenna,§ Gui de Chauliac,‖ Salicetus,¶ Rogerinus,** Lanfrancus,†† Brunus,‡‡ Chalmeteus,§§ Andreas a

* Heister's Surgery, sixth London edition, part ii. p. 333.

† Lib. iii. de Comp. Medicament.

‡ Paré in his Surgery (Book 9, chap. 36) relates that the various superficial tendons have been sutured by some surgeons, but that he never dared to undertake it, for fear of exciting pain, convulsions, and other bad symptoms.

See also a French treatise, entitled "L'Art de faire Rapport en Chirurgie," pages 194 and 195. Also, Verdue on Chirurgical Operations, chap. 32, and Meerken, Obs., cap. 65.

Veslingius tells us (in Obs. et Epist., xv.) that he saw the extensores tibiæ below the knee and the tendo achillis above the heel united by sutures.

In Wepfer, Lib. de Cicuta Aquat., p. m. 92 and 93, there is an account of the flexors of the carpus being united by suture; and a suture of the tendons belonging to the supinator longus and flexor sublimus muscles, in Stalpart van der Wiel, Cent. ii. Obs. 45.

§ Lib. 4, Fen. 4, Tract. 4, cap. 2.

‖ Tract. 3, cap. 4.

¶ Lib. 2, cap. 9.

** Lib. 3, cap. 13.

†† Lib. 2, cap. 9, Doct. 3, cap. 3, and in Chirurg. parv., cap. 4.

‡‡ Lib. i. cap. 5.

§§ Euclund., Chirurg., lib. 11.

Cruce,* and other of the ancient surgeons. Notwithstanding such strong endorsement, the practice was unknown or unreasonably neglected as dangerous until it was revived by Veslingius† and Severinus,‡ in the sixteenth century. After these it was practised by Felix Wurtz,§ seconded by Maynart‖ and Birnais,¶ of Paris, Purmanus,** and others.††

I might quote others who approve of sutures, but enough has been said to demonstrate that they are both feasible and useful, there being no cases quoted against the practice, but theories alone. I suppose that most of my readers will smile at the idea of appealing to the authority of the ancients as warrant for modern practice. If, however, any one will take the trouble to read the works of Galen and others, he will see that a number of our boasted modern facts are mere re-discoveries, for they were known to them either in the germ or *in toto*. Indeed, it is astonishing to see what truths were discovered by men deprived of the microscope, of chemistry, and of practical dissection. They, too, had none of the advantages of division of labor, making use of the investigations of others in departments of science unfamiliar to them, but almost universally had to start for themselves *de novo*.

It is a great mistake to think that because the theories of disease and treatment held by our forefathers were erroneous, therefore their testimony as to facts is not to be received. If they tell us that any given plan of treatment was followed by certain results, there is no reason to disbelieve them because they referred these results to wrong causes. In medicine, as well as in other things, this mental obliquity has stood in the way of true advance in science. The result of this skepticism is seen constantly in the publishing with great heraldings of some "new and important fact recently discovered," when, if we had more respect for the works of our predecessors, and thought it worth our while to peruse them, we might have discovered that our "new fact" was known hundreds of years ago, possibly in Galen's time, and then proved useless.

Finally, let me give the plan of suturing which I have found useful, and which I think ought to have a fair trial. If after extended experience this plan produces more irritation than can be compensated for by the ultimate effect, then, like others, it will fall into deserved oblivion. We should, however, be careful how we form conclusions for or against until observers have given numerous results both good and bad. Personally my experience is but limited, and all I ask for this therapeutic method is a fair trial. It is founded on true scientific principles, which have been proved almost universally applicable to wounds of other structures, and *a priori* would seem so here. The fear of irritation seems to be a relic of the myth that tetanus is the result of wounds of tendon, fascia, etc., before the microscope showed us the minute distribution of the nerves.

For the suture itself I would recommend above everything else carbolized catgut. If this is not at hand, use fine white sewing-silk, likewise carbolized. The catgut prepared by Lister's method is pliable, tough, and yet *not* slippery. As it is generally made, it is almost sure to slip when tied. For the smaller tendons I would advise that the gut be split into the finer strands of which it is composed, as very little strength is needed, and in a few hours an effusion of plastic lymph will reinforce it. The ordinary fine violin-string is composed of three or four strands twisted together, one of which will suffice. Thus used, the suture will generally be rapidly absorbed; but if not it will rarely cause irritation. Silk—better carbolized—will likewise be absorbed or encysted, although with much less certainty. The needle should be passed a few lines from each cut, and then the thread, being tied firmly, should be cut off close to the knot. Great care should be exercised that the thread does not include the sheath of the tendon, for then we might have unnecessary irritation. I cannot conceive how a substance which can be completely absorbed, and does not unduly irritate the delicate peritoneum, when passed through a non-vascular tissue can

* Lib de Vulner., Tract. 2, lib. 2, cap. 8.

† Obs. and Epist., xv., where he tells us that he witnessed the operation performed by the Arabian and Turkish surgeons, and also in Germany.

‡ De Effic. Medic., Lib. 2, cap. 123.

§ De Vulnerib., cap. 14.

‖ Meerken, Obs. 65.

¶ Verdue, Vaugnion, and Dions attribute the revival of this operation to Birnais.

** This author asserts, in his Chirurgica Curiosa, that he has above a dozen times successfully joined divided tendons by suture.

†† Ettmuller mentions seeing the operation performed at Paris in 1665 or 1666, without mentioning by whom; and various instances of this kind of suture may be seen by referring to Stalpart van der Wiel, Obs. 45, Cent. ii.

[I am indebted for these references to Heister's work before mentioned].

increase the inflammation more than exposure to the air and prolonged healing.

Of course, where a big, clumsy, hempen ligature was passed through a tendon, perhaps including its sheath, and the ends kept hanging out of the wound, which was left open for the removal of the thread, whilst vulneraries, digestives, *et id omne genus* were used as dressings, there was increased inflammation.

In addition to the deep suture of the tendons, the wound should be cleansed by some antiseptic wash, and union by the first intention attempted by accurately coaptating the other divided tissues by the ordinary means, above all by position and rest.

By such means I think that the amount of inflammatory trouble will be much less than could at first be expected, and the result most gratifying, as shown in a patient of my own, where the cure was most admirable, nothing ever being heard of the stitch in the tendon. If, however, inflammation supervene, the skin-sutures should be removed, and under soothing dressings I think all trouble will subside as quickly as if no deep stitch were there.

2116 Pine Street, Philadelphia.

PUERPERAL ECLAMPSIA.

BY SAMUEL C. BUSEY, M.D.,
Washington, D.C.

(Extract from the Address on Obstetrics, delivered before the American Medical Association, June 8, 1876. Published by permission of the Committee on Publication.)

THE pathology of puerperal eclampsia continues so involved by the confusion of conflicting opinions, that the student is more confounded than were the builders at the tower of Babel. But, notwithstanding this diversity and contrariety of opinion, there are a few facts which may be profitably studied in connection with recent discoveries.

1st. About ninety per cent. of the cases of puerperal eclampsia* are associated with albuminuria.†

2d. Much the larger number of the autopsies of women dying of puerperal convulsions exhibit renal lesion; and Bright's diseases in women are most frequent among the child-bearing and during the child-bearing period. Hence the corollary is inevitable, that pregnancy stands in the relation of cause.

To this, however, there is an apparent contradiction, in that primiparæ and plural pregnancies are more liable to convulsions than multiparæ, whereas, by parity of reasoning, the reverse result should obtain.

The excess of liability in primiparæ and plural pregnancies, and the additional fact that depletion of the gravid womb is the most certain method of terminating the convulsive seizures, have given undue prominence to the mechanical theory of causation,—obstructive hyperæmia of the kidneys. I acknowledge the force of this hypothesis, but cannot accept its absolute verity. That a kidney engorged either with arterial or venous blood should supply a diminished quantity of urine, and that that should be stained with blood and contain albumen, either or both, is not remarkable, nor is it extraordinary that such a condition should result in the establishment of permanent lesions, similar to if not identical with the ordinary post-mortem appearance of the kidneys found in cases of Bright's disease. But it is the presence of the gravid womb, not of every abdominal tumor,‡ which is so frequently associated with albuminuria. Nor is this phenomenon incident only to the period of greatest mechanical disturbance, but to the condition of gravidity; and oftentimes it is present long anterior to the commencement of convulsions or to the completion of the term. It is but a symptom, denoting, it may be, "change in the blood-pressure" (Wagner) either in the renal vessels or in those of the whole body, or alterations in the parenchyma or substance of the kidney, or, more probably, alterations of the blood. If, then, interruption of the blood-current through the emulgent veins be a factor, it must, like many of the accidental phenomena of utero-gestation, be classed as an adjuvant,—the culminating event,—and as such offers an explanation of the greater frequency of convulsions among the primiparæ, because of the greater tension and rigidity of the abdominal walls, and the unaltered relations of the angle of pelvic inclination. Pregnancy, not the period of utero-gestation, is the essential

* In 50,928 deliveries reported by Clarke, Collins, C. Johnson, Skeleton, and George Johnston, there were 148 cases of convulsions, of which 109 were primiparæ,—seventy-nine per cent.

† Nat. Med. Jour., vol. ii. p. 1 et seq.; also, Obst. Jour. Great Britain and Ireland, vol. ii. p. 254.

‡ "Albuminuria frequently results from impediment to the evacuation of the bladder, occasioned by pressure of fibroid or other tumors upon the ureters." Hüe has observed such cases. Amer. Jour. Obst., vol. ix. p. 159.

factor. The cause, then, must lie in the altered relations, not of the parts which lie in anatomical contiguity, but of the functions of the animal economy.

During pregnancy the mass of blood is augmented, its constituent fibrin is increased, the albumen is diminished, the number of red blood-corpuscles is reduced (most markedly so during the later months), its temperature is elevated, the proportion of solids lessens and the quantity of water increases with the progress of gestation, the normal relation which exists between the fibrin and water becomes disturbed, there is hypertrophy of the left ventricle, the heart becomes stronger, arterial tension (especially in the primiparæ) is increased, and during labor the blood-pressure (Fritsch), both arterial and venous, rises, while a uterine contraction is present. Thus, conditions favoring fibrin-separation and congestions are present to a remarkable degree, and various viscera—brain, heart, lungs, and kidneys—may be temporarily congested. There are also added and retained effete products, and consequent increased strain upon the kidneys. In the primiparæ the vascular apparatus (Harcourt Barnes*) is not adapted, and in many pregnant women the assimilation of nutriment is inadequate to the added physiological work, and the tension of the cerebral vessels, which increases with the progress of gestation, attains its maximum (Madden†) during parturition, when convulsions most frequently occur. There is, in addition, an increase of nerve-force, irritation of the pneumogastric, and a nervous sensitiveness especially characteristic of pregnancy.

The evacuation of the gravid uterus is followed by engorgement of the abdominal veins, which had been more or less obstructed by the pressure of the enlarged organ. This abstraction of the blood from the thoracic organs and from the brain, harmless as it is in most cases of parturition, and salutary as it proves to be in a majority of cases of convulsions, may result in such a condition of cerebral anæmia, enfeebled and irregular cardiac action, and imperfect decarbonization of the blood, as to become, in conjunction with the deteriorated condition of the blood-mass, the immediate and exciting cause of post-partum convulsions.

The condition of the blood during pregnancy, which is aggravated by the loss of albumen, simulates anæmia, yet the condition of the system is that of physiological plethora, due to the increment of the blood-mass. During pregnancy and during labor the brain may contain a redundancy of this impoverished and deteriorated fluid, and yet be insufficiently nourished. The sudden engorgement of the abdominal veins after delivery may withdraw from the cranial cavity the requisite amount of fluid. In both instances the brain is anæmic, in one case containing an excess, in the other a deficiency, of the altered and toxæmic blood.

To these physiological departures from a condition of health, due to the pregnant state and taking place coincidently in the blood, the vascular apparatus, and the nervous centres, most rapid in their progressive development and manifest in their effects upon the animal economy during the period when puerperal convulsions usually occur, and to the consecutive and consequent morbid changes, we must look for the predisposing and proximate causes of puerperal eclampsia. It is not, however, my purpose at present to seek a determining cause, but to associate these conditions with other facts which have but recently come to our knowledge.

The physiological phenomena which favor cerebral congestion lend force to the once very commonly accepted theory that puerperal convulsions were occasioned by a determination of blood to the head. This view derives important corroboration from the anatomical resemblance of the arterial cerebral circulation‡ in woman and in the cow,§ to which parturient apoplexy and convulsions are mainly confined. The points of resemblance, as indicated by Prof. Walley, are in connection with the distribution of the internal carotid and

* Amer. Jour. Obst., vol. viii. p. 719.
† Obst. Jour. Great Britain and Ireland, vol. ii. p. 239.

‡ The human brain derives its arterial supply through the internal carotid, vertebral, and ophthalmic arteries. The circulation is equalized by the circle of Willis, which is formed by the anastomosis of the branches of the internal carotid and vertebral arteries. The basilar artery is formed by the junction of the vertebral arteries.

§ In the horse the vertebrals do not enter into the formation of the brain-circulation. In the pig and dog the basilar artery is formed by the cerebro-spinal branches of the occipital, as in the horse. In the sheep the vertebral, after anastomosing with the occipital, sends branches which gain access to the cranium and contribute to the formation of the basilar, and a large plexus which lies underneath the medulla. The difference of the circulation in the ox and sheep is, that in the ox each vertebral, after anastomosing with its fellow, proceeds forward and connects through the posterior plexus with the occipital, while in the sheep the vertebrals pass into the spinal canal, inosculate, proceed forward as a single artery, again bifurcate, and anastomose with the occipitals. Tralley, Obst. Jour. Great Britain and Ireland, vol. ii. p. 376.

the formation of the basilar artery and the circle of Willis, which favor a larger and more direct supply of blood to the brain, especially to the centres from which emanate the convulsive actions in puerperal eclampsia. If these researches should be confirmed by future investigations, we have present, during pregnancy, a peculiar condition of the blood, increased arterial tension, augmented blood-pressure, and an anatomical arrangement of the brain vascular apparatus, which favor inter-cranial congestion. To these may be added toxæmia, from destruction of the red blood-corpuscles, and retained effete products from renal congestion; malnutrition, from the loss and consumption of albumen, and from an inadequate supply of nutriment; deficient consumption of oxygen, from diminution of muscular action; and the various incidental nervous phenomena which so frequently complicate the period of utero-gestation. All these, acting together in the turbulent union of untoward events, culminate in convulsions.

But perhaps the most important contribution recently made to the study of the nature of puerperal eclampsia consists in the recognition of the febrile phenomena so uniformly associated with the convulsive seizures.

Quincke was the first to observe the elevation of temperature in puerperal eclampsia;* but to Bourneville† we are indebted for the first series of systematic observations. From carefully recorded thermometric observations in seventeen cases, including four fatal cases, he deduces the following conclusions:‡

"1st. During the eclampsic state the temperature is raised from the onset of the attack to its termination.

"2d. In the intervals of the attacks the temperature remains elevated, and at the moment of the convulsion a slight accession takes place.

"3d. If the eclampsic condition is about to terminate in death, the temperature continues to augment, and reaches a very elevated figure; if, on the contrary, the attacks diminish and the coma ceases in a definite manner, the temperature lowers progressively and returns to the normal standard."

In June, 1875, M. Diendé§ published four new observations, two of which confirmed the opinions of Bourneville, while the others invalidated in part the proposition that the temperature was elevated in eclampsia, and incidentally invalidated the proposition that in the intervals it was maintained at a high degree, and slightly elevated at the time of the convulsion. In December last, Herbart‖ published three additional cases; a single observation has been made by Richardson,¶ and two by myself, making in all twenty-seven cases. With the exception of the two cases before referred to, the observations confirm the conclusions deduced by Bourneville. Of these twenty-five cases, seven died. A single death occurred with a temperature as low as 102.4°; in the other six cases the highest elevations ranged from 104° to 109.5°. Among the recoveries the temperature rose in one case to 105.8°, and in another to 106°. Therefore the maximum of safety cannot be established; but in all the fatal cases the temperature remained elevated, and in every case of recovery it lessened. No death occurred with a temperature below 102.4°, and no recovery took place with a temperature above 106°. The thermometric cause was not uniform, because of the alterations produced by the effect of therapeutic agents.

These results present important indications in regard to the treatment and prognosis in cases of puerperal eclampsia. The value of remedies may be determined by the modifications of the temperature, and their inutility may be established by its progressive elevation. The fever, be it a factor of causation or a coincident phenomenon of the convulsive environment, is manifestly the element of danger. This inference is corroborated by the varying success of the different therapeutic agents which have from time to time been employed in the treatment, and which owe their efficacy to their antipyretic qualities, or rather to their power to abstract body-heat. Venesection, which at one time was regarded as the "sheet-anchor" of hope, and even now has many advocates, not only diminishes the mass of blood, lessens arterial tension, and relieves blood-pressure, but also produces rapid falling of the temperature, in the well as in the sick.

* Quincke, Berlin. Wochenschrift, 1869, No. 29.

† Arch. de Toxicologie, Des Mal. des Fem. et des Enf., April, 1875, Paris.

‡ I have had the opportunity of confirming these observations in two cases, the convulsions occurring in one at the sixth month, and in the other at "full term."

§ Inaugural Thesis.

‖ Inaugural Thesis.

¶ Obst. Jour. Great Britain and Ireland, vol. ii. p. 675.

This effect may be transitory, and speedily followed by increased arterial tension and an elevation of temperature, but the fever-course of eclampsia exhibits marked depression after the abstraction of blood. In Richardson's case the temperature fell from 103° to 102° after venesection, but, the tenseness of the jugular veins and unconsciousness continuing, a second abstraction of blood, with the application of an iced collar to the neck, established convalescence. In Herbart's case the abstraction of twenty ounces of blood was followed by an immediate fall of 1°, and in the five succeeding hours of 3.5°. The illustrations might be multiplied; and even in the fatal cases venesection, when employed, either stayed for a time the progressive elevation, or depressed the temperature to rise again.

Chloroform-narcosis lowers body-heat by diminishing the rapidity (Billroth) of metamorphosis, thus lessening the production of heat. Chloral hydrate lessens heart-action and lowers temperature. In the fever of eclampsia the effect of both of these agents is marked by the descent of the curve. Veratrum viride, so highly extolled by Hearn,* depresses the temperature, slows the heart, lessens arterial tension, and diminishes the blood-pressure.† Digitalis diminishes the activity of heat-production. Aconite depresses the body-heat by its paralyzant action on the heart and organs of circulation (Bartholow).† Cold affusions, purgation, and nauseants lessen body-heat. In brief, the successful methods of treatment of puerperal convulsions illustrate the "principle of physiological antagonism" of therapeutic agents to the febrile state. I may add, the evacuation of the gravid womb, in its physiological influence, diminishes the temperature. Nature indicates her resource in expediting the depletion of the uterus in very many cases of puerperal eclampsia, and it is a fact that in a majority of cases the convulsions cease or diminish in frequency and intensity, with a marked reduction of the temperature, immediately upon the completion of delivery.

I will advance a step further, and submit the proposition that the various methods of preventive treatment owe their efficacy to their effects upon the blood-mass and blood-vascular apparatus. As a rule, these are directed to the promotion of digestion, whereby the loss of albumen is replenished, and to the diminution of the hydræmia, by catharsis, diuresis, or diaphoresis. Heretofore the explanation of these excretory operations has rested mainly upon the theory of eliminating the excrementitial and toxic elements accumulated in the blood. Not less important are the simultaneous effects in lessening the mass of blood and restoring the relation of its constituents. The phenomena and consequences of loss of albumen, says Wagner, are disturbance of the endosmosis and exosmosis, insufficient formation of digestive fluids, altered nutrition and repair of tissues, and, especially, often albuminuria.

* Amer. Jour. Obst., vol. iv. p. 28.

† Bartholow, Amer. Clin. Lect., Seguin, vol. ii. p. 17.

‡ Whence it follows that the consumption of oxygen and the chemical interchanges between the blood and the tissues are diminished.

A FATAL CASE OF CHOREA.

BY JAMES H. HUTCHINSON, M.D.

Read before the Pathological Society of Philadelphia, from notes by Morris J. Lewis, M.D.

T. A. H., æt. 12, school-boy, admitted into the Pennsylvania Hospital April 23, 1876. Patient's father and mother are living, and in good health; he has six sisters and one brother, all of whom are younger than himself, and healthy.

Until last October, patient had enjoyed unusual health; at that time he awoke one night with violent pain in the back of his head, and high fever; this attack only lasted one day, and his accustomed health returned, but he was not allowed to attend school for two weeks. Very soon after returning to school, he again had headache, which lasted several days. About two months ago he fell and bruised his right elbow and knee, and after this he had pain in his right wrist, and also in some of his other joints, which his physician ascribed to "rheumatism." Two weeks ago last Tuesday (4th), the pain in the wrist became more severe, and choreic movements made their appearance in this part, so that patient was unable to write; upon the next day choreic movements were noticed in the right leg; this gradually increased, and in one week his articulation became affected. On the 13th, the disease had involved the left arm; but up to this time his appetite and spirits remained unimpaired. On the 16th, patient complained of pain in his head and back, and pressure on the spine caused him to cry out with pain. On the 20th, the pain in his back became much more severe, and the choreic movements were so marked that he could not stand, and had to be confined to bed, where he has remained until admission, the symptoms becoming gradually more pronounced.

On admission, patient is violently convulsed, so much so that it is impossible to confine him to bed without tying him there, and he is utterly unable to speak intelligibly; his temperature is 102½°, but his pulse cannot be counted. Pupils contracted. Ordered pot. bromid., gr. xx, and liq. pot. arsenit., gtt. iij, t. d.

P M. Somewhat quieter. Temp. 101°, pulse 112, respiration 18. Bromide ordered again, and Epsom salts, ℥ij, as his bowels have not been opened for some days.

April 24.—Slept a portion of last night, but during sleep there was some twitching about the mouth.

This morning patient is not so convulsed, but every muscle in the body is affected, and apparently most upon the left side; and as he lies upon the bed, the body is bent slightly, with concavity towards the right. His tongue, which is protruded involuntarily, is pushed somewhat to the right. His pupils are a little more dilated than yesterday. Bowels opened freely by salts. Urine passed in bed, therefore none could be collected for examination. Convulsions are still so severe that restraint is necessary. Some cyanosis. Auscultation reveals a systolic apex-murmur. Ordered l.q. pot arsenit., gtt. iv, t. d., and bromide only at night.

At 9 P.M. pot. bromid., gr. xxx, ordered, and again at 12 M., with some effect, but not much. During the day small quantities of milk have been administered at short intervals. Articulation more distinct this P.M.

April 25.—Early this morning vomited milk, and died at 4 A.M.

It has since been ascertained that his father has had frequent attacks of "rheumatic pains;" and his mother, "rheumatism of the feet." His sister has had several very severe attacks of rheumatism, and has had endocarditis.

Autopsy, thirty-two hours after death.—Rigor mortis slightly marked. About ℥ss of bloody serum in lower part of peritoneal cavity; peritoneum dry, sticky, and covered in a few points with lymph.

Lungs free from adhesions, pale anteriorly, congested posteriorly, but crepitant throughout. In anterior part of left lung there was a small, firm, yellowish nodule, and in its centre a spot of calcareous degeneration. At the root of lung one or two glands were found in the same condition. Thymus gland remains.

Pericardium contains ℥ii of clear serum; no appearance of inflammation.

Heart.—Weight, 5½ oz.; left side contracted, right flaccid; auricles filled with clots, and vessels at base also contain some fibrinous clots. Aortic valves incompetent, leaflets swollen and softened; transparency lost, especially at line of contact. Aorta slightly atheromatous above sinus of Valsalva. Pulmonary valves competent. Tricuspid valve normal; allows a No. xi. ball to pass. Mitral valve passes a No. vi. ball; on auricular side of leaflets a line of papillary vegetations existed, but there was no thickening except at border.

Liver.—Weight, 2 lbs. 2½ oz.; consistence firmer than usual; upon upper surface, a few irregular whitish spots.

Gall-bladder full of bile.

Spleen.—Weight, 2½ oz.; rather firm, but tissue normal.

Pancreas normal.

Mesenteric glands enlarged; paler than usual, but not softened.

Kidneys were not congested; capsule removing normally, leaving a smooth surface; weight, 3½ and 4½ oz.

Supra-renal capsules normal.

Scalp not congested; calvaria congested and thin anteriorly, and on the right side posteriorly.

Brain.—No adhesions of dura mater, which is smooth, but considerably congested. Convolutions normally rounded. Arachnoid in places quite opaque (especially at base); some sub-arachnoid effusion. Vessels of pia mater full of thick fluid blood, especially posteriorly. Lateral sinuses full of dark fluid blood and fibrinous clots. Longitudinal sinus also contains a clot, and, at highest point of curvature, a small spicule of calcareous matter. Middle lobes of brain rather soft. Vessels composing circle of Willis contain no clots, and their walls are not thickened, but they are filled with dark thick blood. Gray matter of brain pinkish in color; white substance shows numerous vascular points. Ventricles contain a little bloody serum. Left choroid plexus is slightly granular anteriorly, while the right is rather more congested than the left. The left ependyma is normal; veins of corpus striatum are full. Ependyma of right ventricle is discolored and yellowish-white. Septum lucidum is firm. Third ventricle contains bloody serum. Fourth ventricle appears normal. Cerebellum normal.

The cord.—Between the third and fifth dorsal nerves the cord is very much softened (about one inch). The dorsal portion of cord is normal with this exception; cervical portion also normal. The lower part, however, is hardened.

NOTES OF HOSPITAL PRACTICE.

PENNSYLVANIA HOSPITAL.

SERVICE OF DR. R. J. LEVIS.

TWO CASES OF SIMPLE LUXATION OF KNEE-JOINT.

I. LATERAL DISLOCATION OF THE KNEE, FOLLOWED BY RECOVERY, WITH GOOD USE OF THE LIMB.

Reported by JOHN B. ROBERTS, M.D., Resident Surgeon.

A STRONG, healthy German, aged 40, was caught in the belting of some machinery, and sustained, in addition to a

scalp-wound and severe laceration of the elbow, a dislocation of the left knee-joint.

From a cast of the limb before reduction.

When admitted to Dr. R. J. Levis's ward of the Pennsylvania Hospital, the luxation was found to be partial, as all lateral dislocations in this situation, unless compound, are; but the deformity was very marked. The tibia was displaced outwards, and at the same time rotated *inwards*, so that the crest of the tibia and the top of the foot looked to the right. The leg was partially flexed on the thigh, and bent outwards, so that it formed an angle with the thigh; the patella was drawn outwards from its normal position, and the internal condyle was seen as a great protuberance on the inner aspect of the joint. The deformity is well shown in the cut, made from a cast taken at the time. Over the internal condyle the skin was ruptured, and the wound, which was about half an inch long, led directly to the bone; but future developments seem to show that the joint was not opened.

The reduction was readily effected under ether by extension and counterextension, with direct pressure applied to the head of the dislocated tibia. The limb was then placed in a double-inclined-plane fracture-box, because there was less tendency to a repetition of the dislocation when the leg was partially flexed over the ridge made by the two inclined planes. The wound was dressed with carbolized oil.

The knee did not show the least tendency to synovitis, and the wound healed rapidly by granulation. About two weeks after the injury the leg was dressed with a long straight posterior splint, with a pad under the popliteal space to prevent any strain coming on the joint. After the lapse of seven weeks this splint was removed, and it was found that the patient, although he had been walking about for a considerable time without crutches when the splint was in position, could not bear any weight on the leg, when the splint was removed, without pain. He could flex and extend the leg to a limited extent, but there was preternatural lateral mobility of the tibia on the femur.

A silicate of sodium dressing was therefore applied, with small strips of wood incorporated in the dressing around the knee, to give additional firmness. He wore this about ten days, and was then discharged, cured. He was able to flex the joint so that the leg moved through an arc of nearly 135°; he could walk without much limping, bending the knee a little with every step, but he soon became tired and had pain in front of the joint. The patella appeared very prominent, as though the tibia were displaced a little posteriorly.

For some time after his discharge he used an apparatus to give lateral support to the knee; but when last seen he was able to dispense with it, and walk about and attend to his work for a great portion of the day without any marked inconvenience.

This case, as well as another recently treated in the hospital, shows that dislocations of the knee-joint, if simple, are not such serious injuries as we are wont to believe.

II. FORWARD DISLOCATION OF THE KNEE, WITH RECOVERY AT THE END OF SIX WEEKS.

Reported by Wm. Bapton Hopkins, M.D., Resident Surgeon.

A strong, vigorous colored man, 46 years old, was admitted into Dr. Hewson's ward of the Pennsylvania Hospital, having been struck upon the top of his head by a falling bucket of sand, which had broken

loose when about eight feet from the hold of the vessel, from which he was unloading ballast.

Upon admission, patient was quite conscious, and seemed to have sustained no serious head-injury, but there was found a partial displacement of the tibia and fibula forward upon the lower extremity of the femur of the right leg; the patella had entirely lost its prominent position, and was quite lost to sight behind the protruding head of the tibia. The popliteal space had also lost its characteristic appearance, and was almost bulging, owing to the presence of the condyles of the femur, the outer especially being so prominent that it could be distinctly seen just beneath the skin. The leg was extended and the foot slightly everted, but on lifting the foot the leg would bend considerably forward, owing to the increased mobility at the knee-joint. The patient had, in addition to the above injury, a clean incised wound of the left leg, about four inches long.

Under ether, having made a plaster cast of the knee-joint, the luxation was readily reduced by extreme flexion of the leg upon the thigh, the limb being placed across the knee of the operator; a Smith's anterior splint was then applied. At the end of eighteen days, no unfavorable symptom having occurred, the splint was removed for the first time, and there was found good antero-posterior motion, with little or no lateral movement. A silicate dressing, reinforced behind the knee by a piece of cardboard, was substituted for the wire splint, and the patient was allowed to get up and walk about on crutches. In six weeks from the time of the accident the silicate dressing was removed, and the patient found himself able to walk without aid, and indeed without a limp. Two days later he was discharged from the hospital, cured, when the final note was made that when his thigh was flexed at a right angle with the body he could flex his leg at the same angle with the thigh, and that there was no deformity or preternatural movement at the knee-joint.

Hypodermic Injection of Cold Water for the Relief of Pain (*New York Medical Journal*, June, 1876).—Dr. S. Henry Dessau reports seven cases of rheumatism in which extreme pain was immediately relieved by the hypodermic injection of cold water in the neighborhood of the affected locality.

TRANSLATIONS.

Thyrotomy (Czerny: *Centralblatt für die Med. Wissensch.*, No. 22, 1876).—The patient was a boy aged seven years, whose larynx was filled with papillary growths, and upon whom, after an ineffectual trial of endo-laryngeal treatment, tracheotomy was performed, and four months later laryngeal fissure. After division of the thyroid cartilage, a sponge provided with cords was thrust downward into the trachea, and the growths extirpated with forceps and scissors. The entire surface of the larynx was then washed with a solution of chloride of iron of the strength of 30 per cent. The application of this fluid is supposed to have some effect in preventing a return of the growths; and at the expiration of seven months this had not occurred. W. A.

The Recognition of Syphilitic Separation of Epiphyses (O. Haab: *Centralblatt für Chirurgie*, No. 25, 1876).—An examination of two cases of epiphyseal separation of syphilitic origin showed microscopic changes which were characteristic. In both cases an affection was met with which was confined to the epiphyseal cartilage. In one case, in which it was not proved that the parents were syphilitic, the separation was due to molecular destruction of the ground-substance of the cartilage. There was no proliferation of cartilage-cells, and they took no part whatever in the process. In the second case the mother was syphilitic, and here the separation of the epiphysis was due to an immoderate growth of the cartilage-cells in the zone of proliferation, together with simultaneous destruction of the substance and cells of the cartilage. In the epiphyses in which the process was beginning, the layer of the epiphyseal cartilage which met the diaphysis was entirely normal, but when the process had advanced to a greater extent, this layer was also affected. W. A.

Grape Sugar in Alcohol (Salomon: *Centralblatt für die Medicinischen Wissenschaften*, xxii., 1876).—While conducting investigations as to the presence of sugar in various animal tissues and fluids, Salomon some time ago became convinced of the existence of this substance in alcohol. It is found even in alcohol from the best manufacturers, and in that of a sp. gr. of 92° to 95°, which is perfectly clear and has no odor of any impurity.

After distillation a yellowish syrup-like residuum was left, which had a sweetish taste, and gave, when tested according to the method of Trommer, a tolerably rich precipitate of the oxide of copper. By polarization the same substance was found to exist, and the fermentation test gave equally positive results. The quantity of sugar was about 0.13 grm. in the litre, and the source of it must probably be sought in the wooden casks in which it is transported, many of which have been previously used to contain liquors. A knowledge of this impurity of alcohol is not without importance to those concerned in medical chemistry, since this fluid is often used in the examination of albuminous fluids suspected of containing sugar. Such a percentage of sugar would give a positive result to a reaction, and lead to a false conclusion as to the existence of sugar; and this error can only be avoided by previous redistillation of the alcohol which is to be used. W. A.

Butylchloral (Liebreich: *Centralblatt für die Medicinischen Wissenschaften*, xxi., 1876).—From studies as to the action of this drug upon rabbits, it appears that it is first manifested by anæsthesia of the head, and that the reflex irritability of the remainder of the body is afterwards affected. Respiration and pulse are diminished in frequency, but the diminution in the first-named function occurs prior to that of the other, and breathing entirely ceases, while the heart continues to beat for some minutes longer. If the central end of the vagus of a rabbit in which cessation of respiration has been caused by butylchloral is irritated, the diaphragm does not contract, while this result can often be attained in cases of narcosis from other causes. The duration of the several stages of the action of this drug is about one-half of that of the similar periods noted after the administration of chloral As to its action upon human beings the following were noted:

To a child aged 4½ years, after trials had been made with smaller doses, 2.5 grm. of butylchloral were given in sweetened water. It soon fell into a sleep, from which it could be aroused by pinching its arms, falling again into slumber as soon as the irritation ceased. Irritation of the cornea, however, had no effect, and it appeared to be entirely without sensation. This want of sensibility was noticed even when the child was roused from its sleep; but the nasal mucous membrane, on the other hand, was sensitive. To lunatics 5 grm. were given, and sleep, with anæsthesia, produced while the patients remained seated upon their chairs, to such an extent were the sensibility and reflex irritability of the body maintained. Contrary to expectation, this remedy has afforded but slight relief in cases of tic-douloureux. W. A.

The Inoculability of Typhoid Fever (Motschutkoffsky: *Centralblatt für die Med. Wissenschaften*, xi., 1876).—These experiments were made upon patients who voluntarily gave their consent, and also upon apes, rabbits, dogs, and cats, and the results obtained were as follows. From numerous inoculations from cases of abdominal and petechial typhus, no positive result was obtained, while recurring fever could be readily reproduced in healthy men, but not in the lower animals.

Successful results were obtained only by the inoculation of blood from patients during the febrile paroxysms, and did not depend upon the existence of any organisms in that fluid which were recognizable by the microscope. The fever produced by inoculation resembled that occurring from other causes in every particular, and the blood of such patients could be used for further inoculations. The period of incubation was in no case less than five nor more than eight days. W. A.

Development of Hymen and Cervix Uteri.—Prof. Dohrn ("Proc. of Soc. for the Advancement of the Natural Sciences," Marburg, 1875) has arrived at the following as the result of recent researches.

At the fifteenth week neither hymen nor cervix exists, the vagina opening into the uro-genital sinus in close proximity to the urethra. By the seventeenth or eighteenth week the lower portion of the vagina contracts, its walls become corrugated, and at the position of the future hymen almost touch. At the same time a rudiment of the cervix appears. By the nineteenth or twentieth week the hymen is represented by a zonular process extending towards the axis of the vagina from its wall. The anterior segment of this process is on a plane a little above the posterior, so that a section of the parts exhibits the rudimentary hymen as two acuminate bud-like projections pointing towards each other, the anterior being the superior of the two. These soon thereafter unite, and the hymen is complete. H. A.

PHILADELPHIA
MEDICAL TIMES.

PHILADELPHIA, AUGUST 5, 1876.

EDITORIAL.

PERNICIOUS ANÆMIA.

THIS so-called new disease, which has attracted so much attention of late years, seems to be more and more clearly outlining itself as a mere stage or form of the well-known diathetic degradation to which the name of leucocythæmia has been applied.

In the number of the *Centralblatt für die Medicinischen Wissenschaften* for December 24, 1875, Professor Eichhorst, of Jena, announced a pathognomonic symptom of progressive pernicious anæmia, by which the disease might be recognized and distinguished from all others, both in the early and in the advanced stage. He says, "While some of the red blood-corpuscles are of natural size, and are marked only by their pale color and imperfect tendency to form *rouleaux*, others are to be seen which at once attract attention by their small size. They are often not a fourth of the size of a fully-formed corpuscle. They are, however, more deeply colored, and when they roll under the covering glass it is seen that their biconcave outline is more or less lost. Their diminutive size is such that many of them look like small red-tinged fat-globules." Now Dr. T. Grainger Stewart states that in two well-marked fatal cases under his care, none of the corpuscles were smaller than normal. Indeed, in one of the cases the red corpuscles were decidedly larger than usual.

We would call especial attention to the advertisement of the Children's Sea-Shore House. The character of Mr. J. S. Whitney, the President, is such as to guarantee efficiency and economy of management, and the scope of the institution must commend itself to every one. The truest charity is that which assists, without pauperizing, those who are struggling to help themselves; and the most useful charity to the State is that which preserves the young material for future citizenship.

LEADING ARTICLES.

SUNSTROKE, OR THERMIC FEVER.

SOME years since, I published a monograph upon the subject of Sunstroke, or Thermic Fever, which was chiefly founded upon experimental investigation, although having also a considerable basis of clinical observation. During the heated term just past, owing to my connection with the medical service of the Centennial Exhibition and to my being on duty at the Philadelphia and University Hospitals, opportunity has been afforded of filling up the hiatus in my previous clinical studies of thermic fever.

Before entering upon the discussion of the clinical aspects of the subject, it may be allowable to call attention to the confirmation afforded by post-mortems recently made in the Philadelphia Hospital, as well as by recent German research, of the observation first made by myself in 1863, namely, the characteristic hardening or contraction of the heart found after death from *coup de soleil*. The results of experiments show that the early coagulation of the cardiac myosin, to which the hardening of the heart is due, is dependent upon the high temperature. The "cardiac spasm" is therefore not to be expected when the patient dies from the *after*-results of the heightened temperature, the excessive heat having been artificially removed from the body during life, whether by the use of external cold or by free venesection. Moreover, putrefactive changes occur so rapidly after death from thermic fever, that, unless the post-mortem is made very soon, the heart which has been contracted may be found relaxed. In these two factors, rather than in incorrect observations, probably exists the reason that the heart in the accounts of autopsies upon sunstroke has so often been reported as relaxed.

The result reached in my monograph was that there are two distinct classes of cases which have been confounded under the name of sunstroke. In the one the patient is collapsed; in the other the bodily temperature is excessive. At the Centennial grounds there have been under treatment a number of cases of the collapsed form of the disease, almost the first which I have ever seen. The severe cases occurred chiefly among persons who had been doing hard work in confined and excessively hot apartments. As a type of them may be noticed the instance of a very powerful man, who without warning fell over unconscious in the Machinery Department. After about fifteen or twenty minutes he was carried into the hospital, still unconscious, in a state of muttering delirium, out of which he could be aroused just sufficiently to respond with a sort of grunt. The skin was as wet as possible; the pulse very rapid and feeble; the breath strikingly cold, the temperature in the mouth being 95¼° F. Contrasting with this case was one of a Scottish harbor-master, also a very large, powerful man, who fell over unconscious in the Main Building, and was brought to the hospital with muttering delirium, rapid, feeble pulse, a dry skin, and a mouth-temperature which was certainly 108° or higher, since it was still 107½° after he had been some minutes in the ice-bath. It certainly is proven that in the true sunstroke the direct action of the heat is the cause of the unconsciousness. The patient just alluded to was plunged into a full bath of ice and water in nearly equal amounts, and great chunks of ice were piled about his head and neck, so that the first dawning of consciousness was the impression that he was a corpse packed away in the ice-box. As his temperature fell, consciousness was regained *pari passu*.

There is a source of fallacy in the study of the action of temperature upon the brain, which is worthy of mention here. A patient is brought into a hospital senseless, from *coup de soleil*. The burning temperature is reduced by a cold bath, but consciousness is not regained. It seems a natural inference that the excessive temperature was not the *fons et origo mali*. It is plain, however, that there are two sets of results caused by the caloric,—the immediate and the secondary effects. The excessive heat produces at once unconsciousness, but if it continue in action long it also causes changes in the nerve-centres, which are themselves sufficient to prevent intelligence. The hospital case may have been under the influence of the intense fever for several hours before entering the ward, and, though the temperature be reduced, unconsciousness and death may be the only possible outcome of the mischief already wrought.

In the two cases just described as occurring at the Centennial grounds, unconsciousness was developed with equal suddenness, and was accompanied by a similar delirium. It seems probable that in the collapse there is more than simple syncope,—that lowered temperature, like elevated temperature, paralyzes the nervous matter, which has been so constituted as to perform its functions upon a certain caloric level.

In my experiments upon animals, it was possible to produce every degree of fever by external heat. In examining the clinical literature of the subject, I was for a long time surprised not to find any discussion of mild cases of sunstroke. Finally, however, in examining the writings of the India practitioners I found that they recognized very clearly mild cases of the disorder, in which the patient suffered no loss of consciousness, only fever of greater or less degree, and in which the termination might be health, or might be sudden *coup de soleil*. This summer, especially upon the Centennial grounds, I have seen an abundance of such cases,—men and women complaining usually of headache and always of wretchedness, with an accelerated pulse, and a temperature of 102°, 103°, 104°, or 105°. It was found that these patients were relieved at once by the cold bath. Such cases must be frequent during long spells of excessive heat, and their true nature has, no doubt, in this country often been overlooked. This appears to be especially the case with children. There can be little doubt that many of the cases reported as cholera infantum, enteritis, etc., are really instances of thermic fever, and are curable by treatment as such. Especially does this seem to be true of those cases in which the disease is popularly said to "go to the head." Cases of this character usually owe their cerebral symptoms either to intense exhaustion, to be treated by stimulants, or to intense fever, to be treated by cold baths. In the *Philadelphia Medical Times*, vol. v. p. 664, may be found a most val-

uable paper, by Dr. C. G. Comegys, concerning the cold-bath treatment of infantile "summer complaint." Any one who has seen, as I have this summer, the child on whom drugs had ceased to act, and who was seemingly doomed to die, relieved in twelve hours by enforced cold bathing every three or four hours, will grant to Dr. Comegys the credit of having introduced one of the most life-saving improvements in modern infantile therapeutics. The sudden sweet sleep, replacing, after the bath, the fretful nights and days of unrest, is a thing never to be forgotten when once seen, and the arrest of diarrhœa is certainly no less remarkable.

The diagnosis of thermic fever in the adult usually offers no difficulty. But on an intensely hot day a malarial paroxysm without chill may readily be mistaken for it. In one case I had to hold my decision; and I have seen others make the error. The malarial fever occurring on a very hot day may be greatly intensified by the heat, and the temperature, as I have seen it, mount so high as to become perilous and to call imperatively for the use of external cold.

The treatment which I have found at once successful in every case of collapse which has come under my care, consists in the use of the *hot* bath to restore caloric, and in the administration of moderate doses of whisky and ammonia internally, and especially the hypodermic injection of from 10 to 15 minims of the tincture of digitalis to restore the cardiac action. Rubbings with warm cloths dipped in tincture of capsicum, followed by the application of dry heat and wrapping in blankets, may replace the hot bath, but probably are less efficient.

In thermic fever the chief treatment is a simple one. Success depends upon its early and efficient use; the most efficient means of abstracting heat is the ice-water bath. I have found in hospital practice a tendency to a routine use of this, the patient being put in always for so many minutes. This must be strenuously guarded against, every case being a study of itself, and the bath being used just long enough to reduce the month or rectal temperature to 100°, and no longer. After the cold bath, I have found hypodermic injections of quinine seemingly of great service in preventing a rise of temperature. There is one further point to which I desire to call special attention. After the subsidence of the first symptoms, headache, slight elevation of temperature, general distress, and sometimes decided mental hebetude, come on. These I believe to be due to a low grade of meningeal or even cerebral inflammation. Certainly I have found them to yield, in some cases very rapidly, to free blistering of the back of the neck and head, aided by small repeated doses of mercurials. In some cases a disordered condition of the abdominal viscera follows sunstroke; in this also small doses of mercurials are of great service.

One great cause of the excessive mortality of sunstroke in hospital practice is the length of time that elapses between the onset of the disease and the use of the bath. In the Philadelphia Hospital this has been in some measure remedied by supplying the ambulance with ice, and causing the patient to be stripped as soon as placed in it, and, under the superintendence of the ambulance physician, rubbed with ice.

H. C. Wood.

CORRESPONDENCE.

New York, July 22, 1876.

To the Editor of the Phila. Medical Times:

DEAR SIR,—At the date of my last letter, as was then remarked, the health of the city was unusually good; but since the last week of June there has been an alarming increase in the mortality, which is, of course, directly attributable to the intense and long-continued heat, which has rendered our Centennial year a notable one in this respect at all events. During the week ending June 24 there were 467 deaths in New York. The hot weather then commenced, and in the week ending July 1 the number of deaths ran up to 636, of which 333 were those of children under five years of age.

During the next week there were no less than 858 deaths, of which 19 were attributed to sunstroke. Such a weekly mortality as this would make the annual death-rate in the city 46.65 for every thousand of the population. Of course, the longer the extreme high temperature continues, the more fearful are its effects, and in the week ending July 15 the number of deaths increased to 1298, which is the highest mortality reached in New York since the first week in July, 1872, when 1591 were registered. The temperature then was not higher than during this second week of July of the present year; but the greater humidity of the atmosphere at that time rendered the heat more fatal in its effects. Of

course the tenement-houses always furnish the great excess of deaths at these periods, the mortality being largely confined to the children of the poor. Out of the 1298 deaths, 649 were among children under one year, 805 under two years, and 862 under five years of age; and of the 862 deaths among children, 596 were from diarrhœal diseases. During this week there were no less than 105 deaths from sunstroke. The registrar of vital statistics reports that the latest weekly returns from the different cities show a mortality representing an annual death-rate of 39.15 per thousand of the population in Brooklyn, 40.17 in Philadelphia, 24.63 in Chicago, 26.92 in St. Louis, 41.27 in Washington, 26 55 in Charleston, 32.27 in Richmond, and 18.81 in Galveston.

If this extreme hot weather continues much longer, it is painful to think how great must be the loss of human life which it will involve. Already the Hunter's Point Ferry line, which is the most convenient route to many of the cemeteries on the other side of the river, is running many extra boats to accommodate the exceedingly large number of funerals; and yet, notwithstanding this, these processions are often obliged to wait a long time before they can be taken across. With a view of diminishing, if possible, the extraordinary infant mortality of the city, the Board of Health, at its last meeting, appointed fifty physicians to serve for one week, or longer, if necessary, as Assistant Sanitary Inspectors, whose duty it should be to visit all the tenement-houses (the city being divided into fifty districts for that purpose), and attend to cases of cholera infantum and other diseases arising from the hot weather and which are not under medical attendance, or to direct them to their regular family physician, or the nearest dispensary, when necessary. The Sanitary Superintendent was empowered to fill all vacancies occurring in this temporary corps. These physicians have been instructed to give ignorant mothers appropriate advice as to the care of their children, and to distribute slips of paper containing printed directions in regard to the same; and it is hoped that many incipient cases of diarrhœal disease may be arrested by receiving prompt attention before they have progressed too far. A large number of those which are presented at the dispensaries are already beyond all hope of recovery. In addition, the corps are furnished with printed slips containing directions for the avoidance of sunstroke and for the proper care of those affected by the heat until regular medical assistance can be summoned, and with tickets for the free excursions of the St. John's Guild's Floating Hospital for Sick Children.

These excursions are now made regularly three times a week, the boat each time taking out from six hundred to fifteen hundred mothers and children. Each mother is allowed to take all her children under six years of age, but none are admitted over that age unless they are ill. No contagious diseases, of course, are allowed on board. The boat starts on her trips from the foot of East Twenty-Third Street, and makes two landings (the second on the west side of town) before finally leaving the city. A number of physicians, who have volunteered their services, usually go out on each trip. The Advisory Council of St. John's Guild is composed of well-known practitioners, Dr. Mark Blumenthal being its President, and Dr. W. De Forest Day, City Sanitary Superintendent, its Vice-President. Among the other members are Drs. Fordyce Barker, Austin Flint, E. G. Janeway, Abram Jacobi, A. L. Loomis, George A. Peters, H. B. Sands, E. C. Seguin, B. F. Dawson, Robert F. Weir, and J. Lewis Smith.

The Children's Aid Society is also making unusual efforts to relieve the suffering among the poor this summer. Some time before the action of the Board of Health referred to above, it established a Relief Bureau, whose visitors should canvass the tenement districts and report necessitous cases, when medical attendance and supplies of appropriate nourishment would be promptly furnished. It is not intended that this plan of operations should interfere in any way with the regular dispensaries in different quarters of the city, but that it should only supplement their work. Flower-distribution has likewise been assumed as a part of its summer work, and during some weeks as many as twelve hundred bouquets have been given away by its agents. In addition, it has again opened the Seaside Home for sick children. During last summer over two thousand children enjoyed the benefits of fresh air, wholesome food, and sea-bathing at this institution, many of them remaining for a week at a time.

Another organization which is endeavoring to diminish the summer mortality among the children is the West Side Relief Association. It has established two sanitaria, one at Coney Island, and the other at Dobb's Ferry, on the Hudson; and it announces that it has made such advantageous arrangements for reduced transportation and cheap supplies, that a gift of one hundred dollars will send one hundred children to either sanitarium, and give them food, lodging, medical attendance, and all the comforts of a home, for one week.

At one of the June meetings of the Medical Journal Association, Dr. Eugene Dupuy read a paper on the "Physiology of the Brain," which detailed in a very scientific manner all the most recent investigations and experiments in regard to this subject. Dr. Dupuy is a very hard student, and an original investigator of some note, who has devoted much attention to the study of the nervous system. He came, a few months ago, to New York from Paris, where he was formerly associated with Brown-Séquard; and he was elected a member of the

American Neurological Association at its recent meeting in this city.

At the following meeting of the Society there was a discussion on the subject of Dispensaries, which had been postponed from the time (in April) when Dr. Ludlum read his paper, a synopsis of which has already been given in this correspondence. It was opened by Dr. Frank P. Foster, and among those taking part in it was Gen. Frederick Mather, the President of the Demilt Dispensary. This well-known and popular institution, the most complete in all its departments of any dispensary in the city, has recently issued its quarter-century report. During the year 1875 there were treated by it 22,491 in-patients and 3957 out-patients; total, 26,448. 64,765 prescriptions were filled, and 953 persons were vaccinated. A summary of the record of the dispensary during the past twenty-five years shows the following general result: The number of patients treated is 592,917; viz., in-patients, 483,157; out-patients, 109,760; males, 245,008; females, 347,909; adults, 331,402; children, 261,515; natives of the United States, 285 548, of other countries, 307,369; prescriptions filled, 1,200,096; persons vaccinated, 52,609. A very interesting sketch of the origin and history of dispensaries in Great Britain and Ireland is included in this quarter-century report. Medical dispensaries, as distinct institutions, are the offspring of the oldest hospital in England, St. Bartholomew's. "The Royal General Dispensary" was organized in St. Bartholomew Close, in 1770, "for the relief of the sick poor, without regard to place of abode." The humane and economic results therefrom were soon so manifest that, within the next twenty years, nine other dispensaries were organized in London; and the whole ten still exist. In Ireland, up to twenty-five years ago, dispensaries were established on the basis that whenever, in any district, a sum of money should be voluntarily contributed for the maintenance of a dispensary, the local authorities were empowered to raise by tax an equal sum for the same purpose; but the experiences during the memorable famine, with its attendant calamities, which commenced in 1846 and ravaged the country for about three years, demonstrated beyond question the inadequacy and partiality of the voluntary plan. Consequently, in 1851, Parliament made a radical change by substituting a compulsory Act. It required the guardians of the poor in the several Unions to divide each Union into dispensary districts, and to organize and maintain dispensaries therein from the poor rates (taxes) of the districts. Under this plan, all the dispensaries are under the care and management of local district officials, and are conducted upon one uniform system, subject to the approval of a central commission located in Dublin. Under the voluntary plan, for ten years ending in 1841, the deaths from smallpox were 58,006, whilst, under the compulsory plan, for the first ten years, ending in 1861, such deaths were only 12,727. This was a reduction from 1 in 20 to 1 in 64 of the total of deaths. In 1863 vaccination was made compulsory. To this should be mainly credited the fact that the total deaths from smallpox in 1866 were 187, and in 1867 only 20. In 1868 the dispensaries treated 767,759 patients, and vaccinated 131,426 other persons. In 1870 the thirty-two counties in Ireland were divided into one hundred and sixty-three Unions, and these Unions into seven hundred and eighteen dispensary districts, with a dispensary in each. There were also 1045 dispensary stations. The entire staff for all these consisted of 793 physicians and surgeons, 38 apothecaries, and 116 midwives. In Ireland rural dispensaries were first devised and put into operation, and there, under all the existing embarrassments, dispensaries first demonstrated their adaptability to country as well as to city, and their great importance in respect to humanity and political economy. Stimulated by the success of the system in Ireland, Parliament, in 1872, passed an Act to improve the Medical Charity System in England and Wales, and under this the entire territory was divided into about two thousand districts, averaging about thirty square miles each.

The report goes on to state: "In London in 1872 there were 78 hospitals, viz., 21 general, and 57 special or class. Of these, 61, viz., 19 general, and 42 special, maintained a dispensary service, under which they treated in all 830,019 patients. The same year there were 43 dispensaries, viz., 31 general, and 12 special or class; and of these, 31 treated in all 253,665 patients. St. Bartholomew's Hospital reports that in 1874 it treated 143,000 dispensary patients. Perhaps it would be offensive if we asked what kind of treatment they received. In the special departments, ophthalmic surgery and diseases of the eye received attention on but two days of the week, and all other cases on only one day. There is no attempt at the complete classification practised at our dispensaries. It is true that much, if not the most, of the attention given to the patients is bestowed by the medical and surgical pupils. But this is not entirely satisfactory, with the fact before us that 143,000 patients in one year gives the average of 457 *new patients* for each secular day. Hospitals which maintain a dispensary practice are not exacting as to patients presenting tickets, or as to their belonging to a class termed the poor. Usually, all who present themselves in the out-patients' rooms are welcomed and treated. When asked if poverty was a condition requisite to being cared for, a surgeon of St. Thomas's Hospital, in 1872, said, 'It is not. Almost every day some come here in carriages.' The inquiry was suggested by the stylish dress and the general appearance of

several patients then present. . . . It is no vain boasting to say that the principal dispensaries in the city of New York, and probably throughout the United States, for efficient and economical management, and in respect to every provision for the care, comfort, and cure of patients, are decidedly superior to the best in London, or, indeed, in England." In this country, as abroad, all the earlier dispensaries restricted their services to patients who were "recommended," or, as phrased abroad, "presented a ticket" or "letter." The evils of this plan were so serious and manifest that it was generally abandoned in this country many years since; and but few, if any, of the modern dispensaries, other than class institutions, have adopted it. The Demilt Dispensary building was completed and opened for business on March 1, 1853; but, as the reports show, the managers employed a corps of physicians and supplied medicines as a dispensary nearly two years before that. "The dispensary from the first was designed to be, and ever has been, progressive in its policy, aspiring to as high grade in everything pertaining to the healing art as is practicable. To that end it has sought superior attainments and skill in its professional staff, and the most approved medical agents known to science, to assist them in their work. This last answers the question sometimes put,—why our expenses for medicines are so large. The deprivations of the sick poor, in respect to lodgings, ventilation, nursing, diet, etc., we think more than justify our policy. The applicant, when sick, even with the best of surroundings, care, and appliances, lingers and languishes. How much more must the sick poor, in their destitution, suffer! In view of such differences, we have aimed to furnish to the sick poor as able and faithful medical care, and as good medicines, as can be commanded by the wealthy; and in proof of this we refer with confidence to the appended catalogue of the physicians and surgeons who have with us engaged in this humane work." Among those who have served at some period or other since the organization of the Demilt Dispensary, we find in the heart and lungs department the names of Alonzo Clark, George P. Cammann, James R. Leaming, Austin Flint, Sr., and Alfred L. Loomis; in that of diseases of the nervous and digestive systems, Isaac E. Taylor, Cornelius R. Agnew, Gouverneur M. Smith, and William B. Bibbins; in that of diseases of women, Gustavus A. Sabine, George A. Peters, J. Foster Jenkins, George T. Elliott, Edward R. Peaslee, and James L. Brown; in that of the eye and ear, Alfred C. Post, William F. Holcomb, Charles E. Hackley, and Richard H. Derby; in that of diseases of children, J. B. Reynolds, William H. Thomson, and Benjamin F. Dawson; in that of diseases of the skin, Henry D. Bulkley, T. Gaillard Thomas, William N. Draper, Fessenden N. Otis, Walter De F. Day, and Lucius D. Bulkley; in that of surgery, William N. Van Buren, Julius S. Thebaud, Lewis A. Sayre, Stephen Rogers, and L. De Forest Woodruff; in that of electro-therapeutics and nervous diseases, George M. Beard and A. D. Rockwell; and in that of diseases of the throat, Charles McBurney and George M. Lefferts.

During the year ending June 30, the Board of Pharmacy conducted 77 examinations, of which 59 were first, 17 second, and 1 third, examinations. Forty-four candidates passed, and thirty-three (or over 42 per cent.) were rejected. Eleven proprietors and sixty-six assistants came up for examination, and of these three proprietors and thirty assistants failed. Twenty-five proprietors and fifty-three assistants were registered during the year.

The Young Women's Christian Association of this city, having had their attention called to the fact that the regulations of many business houses which employ women as clerks still require them to stand continuously for many hours, and that such standing is not only fatiguing, but seriously detrimental to their health, have passed some resolutions asking the proprietors of business houses to modify their rules in this respect, and declaring that in making purchases the members of the Association will always give preference to those houses which thus care for the welfare of their employees.

At the last meeting of the Neurological Society, Dr. Jarvis S. Wight, of Brooklyn, read an attractive paper on "The Correlation of the Sunbeam and the Nerve-Current," in which he endeavored to prove that all nerve-force may be regarded as interchangeable, by various processes of modification or transmutation, with the triple forces that make up the acting power of the sun's rays,—viz., light, heat, and chemical affinity.

A little more than a year ago, perhaps it may be remembered, a performance for the benefit of the Central Dispensary was given at the Academy of Music by the well-known actor George Rignold, on the occasion of his farewell to America. Another similar performance for the same object has now been given by him, on the occasion of his second farewell to America; and an additional interest was lent to this latter appearance from the fact that in order to take his part in the play it was necessary for him to travel over three thousand miles (from San Francisco), and for seven nights and days continuously, arriving just in time for a rehearsal in the morning, and starting off for San Francisco the very next day after the performance, in order to take the steamer there for Australia a week later. This occasion, which Mr. Rignold travelled fourteen nights and days and seven thousand miles to make an attractive one, was honored by the presence of the Emperor and Empress of Brazil. The play was "Romeo and Juliet," and was witnessed

by a large audience, notwithstanding the intense heat of the weather.

Dr. L. De Forest Woodruff, of this city, died recently, after a brief illness. He was graduated at the College of Physicians and Surgeons in 1863, and, after spending two years as interne at the New York Hospital, went to Germany for two further years of study. At the time of his death, he was a Visiting Surgeon to Charity Hospital, Brigade-Surgeon in the State militia, and Fleet-Surgeon of the New York Yacht Club; and he had formerly been one of the Surgeons to the Presbyterian Hospital, as well as to the Demilt Dispensary. He was of a genial disposition, and very popular both among his medical confrères and in society at large. Dr. Gurden Buck has sufficiently recovered from his recent long and dangerous illness to be able to ride out; but, as it is stated that he is suffering from organic disease of the kidneys, the improvement may prove only temporary.

A number of important changes have been made in the Faculty of the University Medical College for the coming season. Dr. Erskine Mason, Professor of Clinical Surgery, Dr. Walter R. Gillette, Adjunct Professor of Obstetrics, and Dr. Robert Watts, Clinical Lecturer on Diseases of Women, have all resigned, and Dr. Chas. A. Budd has been made Professor Emeritus of Obstetrics and Diseases of Women and Children. The following appointments are announced: Dr. J. W. S. Gouly to be Professor of Diseases of the Genito-Urinary System (his old position); Dr. F. D. Weisse to be Professor of Practical and Surgical Anatomy; and Dr. J. Williston Wright to be Lecturer on Obstetrics and Diseases of Women and Children.

Since this letter was commenced, it has been ascertained that the mortality in this city for the week ending July 22 was 997; the weather having been markedly cooler for the last two days. But few cases of the exanthematous and contagious diseases are now seen. During the week ending July 15 no cases of typhus fever were reported, and but ten of typhoid, twenty-one of scarlatina, three of cerebro-spinal meningitis, fourteen of measles, thirty-one of diphtheria, and twelve of small-pox.

PERTINAX.

POWDER FOR PRODUCING OZONE.—In order to produce artificial ozone, Mr. Lender makes use of equal parts of peroxide of manganese, permanganate of potassium, and oxalic acid. When this mixture is placed in contact with water, ozone is quickly generated. For a room of medium size, two spoonfuls of this powder, placed on a dish and occasionally diluted with water, would be sufficient. The ozone develops itself; it disinfects the surrounding air without producing cough.—*Medical Press and Circular*, June 14, 1876.

PROCEEDINGS OF SOCIETIES.

PATHOLOGICAL SOCIETY OF PHILADELPHIA.

THURSDAY EVENING, MAY 11, 1876.

The PRESIDENT, DR. WILLIAM PEPPER, in the chair.

SPECIMENS from a case of fatal chorea, from notes by Dr. Morris J. Lewis. By DR. J. H. HUTCHINSON. (See original communications in current number of the *Times*.)

Dr. S. WEIR MITCHELL thought the specimens too unusual to pass without remarks, and wished to ask two questions. 1. Was the chorea on one side, or both? 2. What was the relation between the suspected capillary embolism and the side affected? in what part of the brain were the capillaries affected?

Dr. HUTCHINSON, in answer to the first question, said that, although the history showed that the choreic movements had appeared first upon the right side, at the time the patient came under his observation the two sides were equally affected.

Dr. LONGSTRETH replied to the second question, that vessels taken from the corpora striata alone were examined microscopically. They were drawn out of the brain-tissue by seizing at a "blood-point." The large vessel (arteriole), seized and drawn out, contained fluid blood, *i.e.*, blood-corpuscles floating in serum; in the capillary branches was seen clotted blood, *i.e.*, the blood-corpuscles could not be made to float. This process of examination did not allow of any exact determination of the depth to which the clot extended in the vessel.

Dr. MITCHELL then desired to know whether this condition of the vessels was unusual.

Dr. LONGSTRETH thought that it presented an appearance different from what he had usually seen. Certainly some of the vessels were "plugged," and by needle manipulation these clots could be "fractured" and separated, leaving clefts in the mass within the vessel. This is certainly unusual behavior for recent (post-mortem) clot; the post-mortem clot being more likely to dissolve and wash away by floating off the corpuscles, just as occurred in the larger vessels. These clots, whatever may have been their origin, were certainly of no great age; they had not lost color to any very marked degree, but, nevertheless, were lighter in color than the fluid portions of blood. Some of the capillaries contained a clot at the distal portion, with fluid blood behind it, towards their junction with the arteriole from which they were given off. A certain number of capillaries contained clots, others contained fluid blood alone. The proportion of plugged to unplugged seemed about as follows: in some cases two to one, in others one to four. Dr. L. was, therefore, led to the conclusion that

there was a distinction to be drawn between the state of the blood in some vessels and that in others. He had parts of the brain hardening (Müller's fluid), with a view to making section for their more perfect examination. The capillaries of no other parts of the brain than the portions mentioned were examined.

Dr. MITCHELL inquired the size of the vegetations on the valves of the heart, and whether any were recent, and if any still remained of a size fitted to become emboli in the lesser vessels of the brain.

Dr. HUTCHINSON replied that the average size of the vegetations on the mitral valve was about that of a pin's head. More of them were certainly too large to find their way so far as to the smaller vessels of the brain, and they were all unquestionably the result of recent inflammation.

Dr. LONGSTRETH said he had met the statement, but could not now recall its source, that emboli derived from vegetations on the mitral orifice were smaller than those coming from a similar condition of the aortic valve. The explanation offered was that, having a greater distance to travel, and also from the fact of being within the cavity of the ventricle during at least one contraction of the muscular wall of the heart, the emboli of mitral origin were more likely to be broken into very small fragments than those of aortic origin.

Dr. JAMES TYSON said he had been impressed, in examinations of the brain, with the almost universal presence of blood in the capillaries; indeed, they seemed always full of blood; and on this account he had found few better sources for the study of capillary structure than portions of brain, for in them capillaries could always be demonstrated, because thus filled. He thought also that the method pursued by Dr. Longstreth for obtaining capillaries for examination was a very unreliable one, as in drawing out vessels from the brain they would be torn across long before the capillary size was reached; arterioles would thus be obtained, but, he feared, not capillaries.

Dr. LONGSTRETH was confident that capillaries could be thus obtained, while at the same time he did not consider the results of the examination by any means perfected.

Dr. TYSON did not wish to be understood as denying the possibility of thus obtaining capillaries. He had never tested it; it simply seemed to him an uncertain method.

Dr. HUTCHINSON called attention to some other points in the history of the case, which had not been alluded to in the discussion. Among these was severe headache, which had appeared some time before the beginning of the attack of chorea, and which had been so violent as to necessitate the boy's withdrawal from school. This, taken in connection with the fact that the longitudinal sinus contained a small spicula of calcareous matter, seemed to indicate the existence of cerebral disease for some time before any disordered movements were observed. He said also that the theory which attributed the symptoms of chorea to plugging of the smaller vessels of the brain was, in his opinion, very far from proved. All that could be positively asserted at the present time was that vegetations upon the mitral valve are very frequently found in the bodies of those who have died of chorea. In these cases it may be true that the irregular movements are due to the irritation caused by the emboli, but it is obvious that another explanation must be sought for those cases in which no vegetations are found. Moreover, in most of the cases of cerebral embolism on record, we have no history of choreic movements. He was inclined to think, with Dr. Ogle, that if it is true that such plugging is a cause of chorea, the movements would continue during sleep, since in this case there could be no remission of the irritation upon which they depend. It is difficult upon this theory to explain those cases in which there is an abrupt cessation of the disordered movements, either as the result of treatment or for some other reason.

Dr. MITCHELL had no doubt that there was a chorea from minute arterial embolism, and that it sometimes arose from thrombosis. He had seen a gentleman who, having had syphilis several years before, had right hemiplegia and aphasia. He became entirely well, and the next summer had suddenly left unilateral chorea, followed by mental disturbances of very unusual nature. They became entirely well under anti-syphilitic treatment in less than six weeks; and this was, he believed, a case of thrombosis, and one of great rarity.

There are also choreas which are of reflex origin, and Dr. Mitchell had seen three cases arising from peripheral injuries. Was it likely that the immediate pathogenesis was the same in all? Moreover, chorea Dr. M. believed to be divisible into three species: The ordinary form, in which there were first awkward voluntary movements, the disorder increasing, and at last also irregular automatic motions. A second form was more rare. In it, the voluntary motions remaining perfectly good, there were perpetual unrest and automatic activity, stilled at once during a willed act. The third species is characterized by absence of automatic activity and by choreic disturbance of all volitional acts. These latter cases are sometimes congenital and sometimes are post-paralytic. It may well be suspected that different pathological states, or at least degrees of such states, occasion these varied forms. He recalled but one fatal case of chorea. This occurred in a woman three months pregnant. The attack was excited in consequence of her brother's drawing a "jig-saw" through a piece of parchment in the vicinity of her ear. She was much frightened, and within five minutes exhibited choreic movements of the right

side and of a very violent character, which at length became generalized.

Dr. F. P. HENRY thought the effect of treatment here, as elsewhere, has a bearing on the pathology of the disease. The discussion tended towards proving that the symptoms in this case depended upon irritation somewhere in the motor tract. Such an irritation would give rise to a double train of symptoms; first, convulsions, and secondly would cause contraction of the unstriped muscular fibres of the blood-vessels, through the vaso-motor system of nerves, which contraction may be supposed to interfere with muscular action. The treatment to which he alluded has for its object the dilatation of the walls of the blood-vessels by nitrite of amyl. During his late term of service at the Episcopal Hospital, he had seen a number of cases treated in this manner. Among these were some exhibiting the cold stage of intermittent fever, some of epilepsy, and six cases of chorea. The treatment was very carefully carried out by his resident physician, Dr. Ziegler, who suggested this method of treatment in chorea. All of the cases of chorea but one were cured in a very short space of time, and in all marked improvement dated from the first inhalation. It would be anticipating Dr. Ziegler's paper to give further details.

Dr. LONGSTRETH said if Dr. Henry referred to what was ordinarily spoken of as the motor tract,—*i.e.*, the conducting fibres,—he did not think we ought to expect to find changes in it. We should rather expect to find changes, if anywhere, in areas of gray matter on the surface of the convolutions, or in the gray matter of the ganglia whence are derived the nerve-fibres which go to make up the motor tracts. According to Hughlings Jackson, the changes in brain-matter which have as symptoms convulsive movements are those affecting the cells, and the changes are of such nature as not to destroy the integrity of the individual cell, but to irritate it and render it liable to irregular and involuntary "discharges" of nerve-force, thereby producing convulsive action of the muscle-groups connected with the areas of "irritated" nerve-cells. And it is here in the brain-cells, therefore, that we are to look for the changes in the cases of choreic movements, and not in the motor tract itself The "irritation" of these brain-cells may on the one hand be due to excessive vitality corresponding with states of local or general congestion, and, therefore, over-nutrition of these cells from superabundant nutrition; or, on the other hand, to anæmia and depressed vitality.

Dr. HENRY said he used the term "motor tract" in its most comprehensive sense, including under it those portions of the nervous system in which motor impulses originate, as well as those through which they are conducted.

Dr. LONGSTRETH said, in reference to remarks of Dr. Hutchinson on embolism resulting from valvular disease, that where large vessels of the cerebral circulation were occluded, he did not think we ought to expect choreic movements to result. It would be rather in cases where a portion of the capillaries were plugged, whereby *portions* of areas of brain-cells connected with a given muscular group—*e.g.* the flexors of the fore-arm—were deprived of blood, and, therefore, function abnormally, whilst the other brain-cells for the identical group, receiving their normal supply of blood by means of the other unobstructed capillaries of the same area, function normally; whereas in plugging of a large vessel—*e.g.*, the middle cerebral artery—the whole of the area supplied by that vessel would be cut off from its blood-supply, and we should have resulting the phenomena of paralysis.

Dr. HUTCHINSON reminded Dr. Longstreth that in some of the cases claimed to be of embolic origin, plugging of the larger vessels rather than of the capillaries was intended.

Dr. JOHN ASHHURST, JR., said that another objection to the embolic theory was the localization of the lesions. Capillary cerebral *thrombosis* could of course be understood; and pathologists were, on the other hand, familiar with the effects of general capillary *embolism* from cardiac disease (*arterial pyæmia*), in cases such as one reported to the Society some years since by the President. But why capillary embolism from cardiac disease should in one instance produce chorea, and in another instance arterial pyæmia with no chorea, did not appear.

Dr. LONGSTRETH desired to call attention to one or two whitish spots seen on the surface of the liver, when removed from the body, which were found on microscopical examination to be due to fatty change (degeneration) of the liver-cells, possibly caused by embolism. Now, with regard to the election of the site for plugging, when dealing with exceedingly minute particles detached from the valves, such as must be necessarily supposed to exist in these cases, the brain must be given the preference, with its minute capillaries measuring .0068–.0065 mm. The liver-capillaries come next,—.0090–.0026 mm. All other capillary net-work of the body would allow emboli of this size to pass and be returned to the general circulation.

Dr. MITCHELL called attention to another curious fact: that in severe cases of chorea we are apt to have unilateral palsy. One would expect cases of this kind to be more apt to be associated with embolic changes. But in examining a large number of cases with this point in view, he was unable to find any association of the unilateral palsy, thus occurring, with heart-lesions.

Dr. HUTCHINSON said Dr. Ashhurst's objection to the theory has much force, but it is a fact that emboli are more apt to be found in

certain organs than in others, the spleen being the most common seat.

Dr. C. B. NANCREDE thought the more frequent occurrence of emboli in certain situations was easily explained by the peculiarities of the capillary system in different organs. In the spleen there are really no capillaries, while the movement of the blood is very sluggish, and, therefore, likely to encourage embolism. In the kidney, as is well known, there are really two capillary circulations, tending greatly to slow the circulation; and the same may be said in a less degree of the liver.

Dr. J. EWING MEARS referred to a case which occurred while he was a resident physician at the Philadelphia Hospital,—a case of unilateral chorea, following criminal abortion practised upon a young girl, who died sixteen months later. He was informed that the post-mortem examination revealed sclerosis of the anterior columns of the cord. He thought the choreic movements were temporarily diminished by sulphate of zinc, which was given in gradually increasing doses until from 12 to 13 grains were given three times a day. The case was also under the care of Dr. Pepper.

Dr. WM. PEPPER hesitated to say anything where so much had already been said, but one or two points of interest strongly suggested themselves. He had himself seen three fatal cases of chorea, one of puerperal chorea at the Preston Retreat, one in connection with a fracture of the humerus, and the third the case already alluded to by Dr. Mears. The last was a very chronic case, in which there was subsequently found chronic spinal meningitis associated with slight cortical sclerosis of the cord. No treatment was of any permanent avail.

In the case which occurred at the Preston Retreat, there were minute vegetations on the mitral leaflets, but no positive evidence of plugging of any cerebral vessels was found, though the examination was not so minute as it should have been. In the case complicated with fracture of the humerus (reported in vol. ii. of the Pennsylvania Hospital Reports), there was distinct plugging of minute cerebral vessels.

While, however, it seems that the evidence is sufficiently strong to make it probable that such embolism occasionally serves as the cause of chorea, it is evident that it is only one of numerous pathological conditions which may appear in connection with that complex disease. Indeed, it seems necessary to recognize that the choreic muscular movements are symptomatic merely of a certain disturbed condition of the cerebro-spinal motor tract; that this abnormal state may be brought about by various organic or functional influences; and that according to the region chiefly affected, and the degree of the disturbance, will be the character of the resulting chorea.

As to what has been said about the character of the vegetations, it is to be remembered that in acute endocarditis the mitral valve is most frequently affected, while the aortic leaflets are most frequently the seat of chronic lesions. Now, it is precisely in acute endocarditis that the vegetations, being soft and tender, would most readily be detached in minute fragments; and it seems likely that the circumstance that the capillary embolism which is held to cause chorea occurs in connection with acute mitral endocarditis, is due to the above reason, rather than to the fact that the fragments of fibrin pass through the ventricle before entering the aorta.

The case alluded to by Dr. Ashhurst was a remarkable one. The patient had been thought to have cardiac disease associated with pulmonary phthisis. But at the autopsy there were found extensive aortic and mitral disease, old apoplexy of lungs, with chronic catarrh and embolism of spleen, kidneys, and mesenteric vessels. The latter illustrated what has since been described by Ponfick, the origin of aneurisms from embolism, while in the spleen some of the embolic patches have undergone fatty softening and led to a decomposing puriform fluid, from which septic infection of the system had ensued.

Dr. JAMES C. WILSON called attention to the high degree of localized softening of the cord, which seemed to have been overlooked in the discussion. He thought the fact of the annular constriction was one of importance, especially as the case was one of short duration. He asked Dr. Mitchell whether he did not think it was possible there might be some relation between the chorea and the condition in question.

Dr. MITCHELL replied that he should hardly think there would be, although some French pathologists think that chorea is due to disease of the cord, because in dogs with choreoid movement section of the cord in the neck does not arrest the spasms. But he did not think that the choreoid condition of these dogs at all resembles that of chorea, but rather that in which a group of muscles is affected, as in the cervical spasms seen in adults.

Dr. PEPPER said another lesion of interest here is the incipient peritonitis. It is striking that there should be found general dryness, some effusion, and lymph, and suggests the question whether extensive plugging of the capillaries of this serous membrane might cause this.

Dr. HUTCHINSON said this presented quite a remarkable appearance, so that when the abdomen was first opened he thought there was peritonitis. He also asked why girls should suffer from chorea in greater proportion than boys, if this were caused by plugging of the smaller vessels, the indirect but nevertheless the real cause of the embolism,

rheumatism, being so much more common in the other.

Dr. MITCHELL thought it was simply because the female brain was more excitable; and, while he did not accept the theory of capillary embolism as explaining all cases, he thought the fact that women are more frequently the subjects of chorea than men did not of logical necessity exclude emboli.

Dr. PEPPER reminded Dr. Hutchinson that statistics showed that the disease occurred indifferently in both sexes. He thought, also, that fatal cases, even including puerperal cases, did not include more females than males.

Fatty infiltration of liver, and large white kidneys. By Dr. LOUIS STARR.

Charlotte ——, æt. 25, was admitted to the "Grasby Ward" of the Episcopal Hospital, on March 20, 1876. She had always been delicate, and subject to attacks of bronchial catarrh on slight exposure, but had never had any symptoms of serious pulmonary disease until December, 1875, when she began to suffer from cough and shortness of breath, and to lose flesh and strength. These symptoms steadily increased up to the time of and after her admission to the hospital. When the patient came under my care, in the latter part of April, she had almost complete anorexia, severe hectic fever, profuse colliquative sweating, and diarrhœa, and was greatly emaciated. There was pain in the right side of her chest, dyspnœa, and obstinate cough, attended with free muco-purulent expectoration. Her pulse was frequent and feeble, and there was too much prostration to admit of a careful exploration of her chest. On superficial examination, however, restriction of the respiratory movements and diminished elasticity and dulness on percussion were observed over the whole of the right side of the thorax, while on auscultation, bronchial breathing and coarse mucous râles were detected, especially over the posterior surface of the lung. On the left side percussion was also dull, though to a less degree than on the right, and auscultation revealed numerous moist, crackling râles. Death occurred on May 1.

At the *autopsy*, which was made twelve hours after death, by Dr. Roland, the resident physician, the whole surface of the right lung was found to be firmly adherent to the chest-wall. The upper and middle lobes were completely consolidated by a caseous infiltration. In the upper posterior part of the lower lobe there was a cavity about one inch and a half in diameter, bounded by moderately smooth walls, and the rest of the lobe, with the exception of a small strip along its base, was infiltrated by a material similar to that which occupied the superior portions of the organ. The upper lobe of the left lung was also infiltrated with cheesy matter, and throughout the lower lobe there were numerous isolated masses of the same character, surrounded by congested pulmonary tissue. The infiltration had commenced to soften, so that on cutting into the lung, small cavities, having irregular walls and filled with pus, were observed, and on making pressure with the fingers, pus flowed freely from the bronchial tubes. The lungs together weighed four pounds. The heart was small and fatty; a large soft clot filled the cavity of the right ventricle; none of the valves were diseased. The liver weighed seven and a half pounds, was much increased in size, and was in a state of advanced fatty infiltration. The left kidney was about one-third larger than normal, and presented the gross appearances of that form of alteration known as "large white kidney." The right kidney was likewise increased in size, and showed, in a less marked manner, the same changes as the left.

GLEANINGS FROM EXCHANGES.

IDIOPATHIC ATROPHY OF THE SKIN (*Boston Medical and Surgical Journal*, June 1, 1876). —Dr. R. W. Taylor communicates an interesting case of this rare affection in a woman 45 years old. It consisted of groups of round and oval patches of skin of various sizes, from the diameter of two lines to that of half an inch, situated on the arms, abdomen, and thighs. Their surfaces were very smooth, and had a white glossy appearance, resembling very much mother-of-pearl. They were sharply defined, and very slightly depressed below the general level. The subcutaneous tissue was thinned, and there were no hairs upon them, not even downy ones. On the abdomen a group of these patches, about a dozen in all, presented a marked contrast to the atrophic lines of pregnancy, with which they were interspersed. They were somewhat anæsthetic, which the patient illustrated by sticking a pin into them, and she also stated that she sometimes experienced a sensation of numbness in them. In addition to the white patches there were others somewhat smaller, of a light-brown color. The surface of the latter was rough, and they closely resembled tinea versicolor. The brown epithelial scales could be easily scraped off from the older and larger ones, leaving patches identical with those above described. It was evident that the brown spots were the earlier manifestations of the disease, being somewhat hyperæsthetic at first, and, after increasing slowly in size for some six months, by imperceptible desquamation they changed into the white atrophied patches. This was the whole process, and no subsequent changes in the affected parts were observed. The disease had existed two years. Dr. Taylor expresses the suspicion that it is a tissue-degeneration due to some obscure faulty innervation.

DIGITALIS-POISONING (*The Clinic*, May 27, 1876).—Dr. Conrad Köhnhorn had the opportunity of observing two recruits, who, for the purpose of escaping military service, were using digitalis in the form of pills made of the powdered leaves. One of them, who died, took in between four and five weeks two hundred and forty-six grains, the survivor having taken in the same time one hundred and thirty-eight grains.

So rare is the opportunity of observing an instance of digitalis-poisoning disassociated from a diseased state, that Dr. Köhnhorn carefully reviews the symptoms, and bases upon them a division of the effects of this poison into a twofold action, the local and physiological. That the former is irritant the isolated congestions of the mucous membrane of the stomach and bowels with ecchymoses leave, he maintains, but little doubt; and notwithstanding that the most recent work by Rabuteau, 1875, denies such an influence to the drug, yet the proofs by others that digitalis and digitalin inflame the subcutaneous tissues, irritate excoriations and wounds, cause redness of the conjunctivæ, with dilatation of the pupils and disturbance of vision, and excite the Schneiderian membrane to sneezing, tend to support this view.

To this local irritation the following symptoms may be referred: the stomach and bowel catarrh, the coated tongue, foul breath, loss of appetite, heartburn, nausea, vomiting, constipation, and tenderness of the epigastrium.

The second recruit confessed that by the use of two pills four times a day anorexia and nausea were produced on the second day, and vomiting on the third.

The physiological action of digitalis consists in its effect on the heart, in that it prolongs the heart-stroke and *lessens the force* of the heart's contraction, and these results are brought about by its influence on the coordinating and musculo-motor nerves of this viscus.

Thus can be explained all the remaining symptoms. By the prolongation and weakening of the heart's action the balance of the circulation is soon disturbed (the parts most distant from the centre feel it most); the law of gravity gains an excessive power over the blood-distribution, and hence the anæmic brain, with its train of inseparable consequences, the headache, vertigo, noises in the ears, dimness of vision, faintness, amounting to actual syncope on assuming the erect position, with, finally, the sudden death when the nerve-paralysis became complete.

Of the narcotic influence assigned to digitalis there has been no evidence whatever in these cases, and this ascribed effect has either originated in error or been confounded with the languidness of syncope.

TREATMENT OF CYSTITIS BY ATROPIA ENEMATA (*Virginia Medical Monthly*, June, 1876).—Dr. S. W. Semple reports four cases of acute cystitis, out of a large number which he has successfully treated by a method which is not very commonly employed. It consists in the administration by enema into the rectum of from minims xl to ℥j of a solution of sulphate of atropia (gr. j to water ℥viij), to which is added sufficient carbolic acid to prevent the formation of organic entities and the deposit of the atropia. The dose is added to ℥ss of water for administration, and given twice in twenty-four hours. It uniformly and immediately arrests the frequent strangury and the painful micturition, gradually checks the mucous and sanguineous discharges, and relieves the suprapubic pain with the cystic inflammation. When the urine is alkaline, Mettauer's nitro-muriatic acid is given to correct it; and when it is so acid as to irritate, the acidity is corrected by antacid remedies, of which the bicarbonate of potassium with subnitrate of bismuth is generally preferred, because of the tonic effect of the bismuth and its very soothing effect on the mucous surfaces of the urinary organs. When constipation exists, which is frequent, it is relieved as occasion requires, generally by the German pulveris glycyrrhizæ compositus, until the bowels begin to act regularly from the effect of the atropia, which generally soon results.

FIBROID TUMOR OF THE PROSTATE SUCCESSFULLY TREATED BY INJECTION OF IODINE (*Virginia Medical Monthly*, June, 1876).—Dr. Melville Taylor reports the case of a man, æt. 26, who, when he first came under observation, had the following history. About nine months previously he had discovered a tumor the size of a chestnut in the perineum, just behind the scrotum; it was at first movable, but soon became stationary. Its growth was progressive. He had never had any pain, but complained of a sense of weight and dragging in the perineum, and of severe tenesmus. He urinated frequently, slowly, and with much straining, the water at times containing mucus, and being ammoniacal. Lately his urine had been dribbling from him. His walking was greatly interfered with by the tumor between the thighs, and it was for this reason only that he applied for relief.

Exploration of the prostate by rectal touch revealed an abnormal enlargement of this organ. It was hard and firm, presenting to the fingers four different segments. No increased sensibility. Upon the passage of the catheter, an obstruction was met with at the prostatic portion of the urethra; but this, after some manipulation and not a little pain to the patient, was overcome, and the instrument slipped into the bladder, when about ℥xx of fetid urine was passed, although he had urinated previous to its passage. The catheter caused some pain when impinged against the walls of the bladder.

The diagnosis of fibroid being made after a few other examinations, treatment was com-

menced by the injection of iodine into the tumor, fifteen drops of the tincture being used at intervals of several days. There was some little irritation at first, but this soon subsided, and the final result was a complete cure, the prostate decreasing from the size of a base-ball to its normal dimensions.

A Russian traveller, Colonel Prejevalsky, who has recently penetrated into the interior of Mongolia, has obtained most conclusive evidence as to the character of medicinal rhubarb. It seems settled, from his observations, that the root is that of Rheum palmatum.—*Chemist and Druggist.*

NOTES AND QUERIES.

INTERNATIONAL MEDICAL CONGRESS—PHILADELPHIA, SEPTEMBER 4–9, 1876.

The International Medical Congress will be formally opened at noon on Monday, the fourth day of September.

The sessions of the Congress and of its Sections will be held in the University of Pennsylvania, Locust and Thirty-fourth Streets

The General Meetings will be held daily, from ten to one o'clock. The Sections will meet at two o'clock.

Luncheon for members of the Congress will be served daily in the University building from one to two o'clock.

On Wednesday evening, September 6, Dr. J. J. Woodward, U.S.A., will address the Congress on the Scientific Work of the Surgeon-General's Bureau.

The Public Dinner of the Congress will be given on Thursday evening, September 7, at seven o'clock.

The Registration book will be open daily from Thursday, August 31, to Saturday, September 2, inclusive, from twelve to three P.M., in the Hall of the College of Physicians, N. E. corner of Thirteenth and Locust Streets, and at the University of Pennsylvania on Monday, September 4, from nine to twelve M., and daily thereafter from nine to ten A.M. Credentials must in every case be presented.

Letters addressed to the Members of the Congress, to the care of the College of Physicians, N. E. corner Locust and Thirteenth Streets, Philadelphia, during the week of meeting will be delivered at the University of Pennsylvania.

The Secretaries of State and Territorial Medical Societies are requested to forward without delay to the Chairman of the Committee on Credentials, I. Minis Hays, M.D., 1607 Locust Street, Philadelphia, lists of their duly accredited delegates to the Congress.

Delegates and visitors intending to attend the Congress are earnestly requested individually to notify immediately the same Committee.

This information is desired to facilitate registration, and to insure proper accommodation for the Congress.

Members intending to participate in the Public (subscription) Dinner of the Congress will please notify the Secretary of the Committee on Entertainment, J. Ewing Mears, M.D., 1429 Walnut Street, Philadelphia.

Gentlemen intending to make communications upon scientific subjects, or to participate in any of the debates, will please notify the Commission before the fifteenth of August.

Philadelphia, July 20, 1876.

To the Editor of the Philadelphia Medical Times:

Dear Sir,—A patient suffering from alcoholism stoutly refused to take bromide of potassium or any other "confounded medicine." Twenty grams were dissolved in a glass of milk, which he drank readily. Since then I find that twenty grains are entirely disguised by one ounce of milk. I have also found milk a very useful liquid to "wash down" salicylic acid wafers. It has always in my hands prevented the burning in the stomach which is so often produced when the acid is given in large and oft-repeated doses.

Very respectfully,

A. K. Minich,
2228 N. Front Street.

July 26, 1876

ERRATUM.

At the foot of second column, p. 522, No. 226, for "Dr. Eshlemann" read "Dr. Eagleton."

OFFICIAL LIST

OF CHANGES OF STATIONS AND DUTIES OF OFFICERS OF THE MEDICAL DEPARTMENT U.S. ARMY FROM JULY 16, 1876, TO JULY 29, 1876, INCLUSIVE.

Swift, E., Surgeon.—Leave of absence extended two months. S. O. 142, A. G. O., July 14, 1876.

Perin, G., Surgeon and Medical Director.—Granted leave of absence for one month, with permission to apply for an extension of ten days. S. O. 140, Department of the Missouri, July 10, 1876.

Milhau, J. J., Surgeon.—Leave of absence extended to October 1, 1876, and his resignation accepted by the President, to take effect October 1, 1876. S. O. 148, A. G. O., July 21, 1876.

Clements, B. A., Surgeon.—Assigned to duty with Big Horn Expedition in the field. S. O 98, Department of the Platte, July 17, 1876.

Byrne, C. C., Surgeon.—To proceed without delay to mouth of Big Horn River, M. T., and report to Brigadier-General Terry for duty with his command in the field. S. O. 86, Department of Dakota, July 19, 1876.

Bache, D., Surgeon.—Assigned to duty at Angel Island, California. S. O. 73, Department of California, July 19, 1876.

Tilton, H. R., Assistant-Surgeon.—To proceed to mouth of Big Horn River, and report to Brigadier-General Terry for duty with his command in the field. S. O. 88, Department of Dakota, July 22, 1876.

Horton, S. M., Assistant-Surgeon.—Assigned to duty as Post-Surgeon at Fort McHenry, Md. S. O. 143, Division of the Atlantic, July 28, 1876.

McElderry, H., Assistant-Surgeon.—Granted leave of absence for two months. S. O. 148, c. s., A. G. O.

Lippincott, H., Assistant-Surgeon.—Assigned to duty at the Military Academy, West Point, N. Y. S. O. 148, c. s., A. G. O.

Girard, A. C., Assistant-Surgeon.—Granted leave of absence for six months, with permission to go beyond sea; to take effect when relieved by Assistant-Surgeon Lippincott. S. O. 148, c. s., A. G. O.

Girard, J. B., Assistant-Surgeon.—Granted leave of absence for one month. S. O. 152, A. G. O., July 27, 1876.

Kimball, J. P., Assistant-Surgeon.—To accompany battalion of Twenty-Second Infantry under Lieutenant-Colonel Otis to mouth of Big Horn River, M. T., and, upon arrival there, to report to Brigadier-General Terry for further instructions. S. O. 83, Department of Dakota, July 12, 1876.

Harvey, P. F., Assistant-Surgeon.—To accompany battalion of Twenty-Second Infantry, under Lieutenant-Colonel Otis, to mouth of Big Horn River, M. T., and, upon arrival there, report to Brigadier-General Terry for further orders. S. O. 83, c. s., Department of Dakota.

Semig, B. G., Assistant-Surgeon.—Leave of absence extended one month, with permission to leave limits of this Military Division and apply for a further extension of one month.

Taylor, B. D., Assistant-Surgeon.—To proceed immediately to mouth of Big Horn River, M. T., and report to Brigadier-General Terry for duty with his command in the field. S. O. 85, Department of Dakota, July 17, 1876.

Price, C. E., Assistant-Surgeon.—Assigned to duty at Camp Bidwell, California. S. O. 73, c. s., Department of California.

Worthington, J. C., Assistant-Surgeon.—To report to Commanding Officer, Department of Arizona, for assignment to duty. S. O. 150, c. s., A. G. O.

Spencer, W. G., Assistant-Surgeon.—Granted leave of absence for one month. S. O. 106, Department of the South, July 27, 1876.

Lord, George E., Assistant-Surgeon.—Missing in action with Sioux Indians on Little Big Horn River, M. T., June 25, 1876.

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4. ELASTIC CUSHION (to prevent sound in stepping).
5. ANKLE-JOINT (to gain space in some cases).
6. HEEL TENDON, of silk (to increase durability, and avoid breaking).
7. AUXILIARY TENDONS (to aid in controlling the motions).
8. COVERING (to save weight, and give water-proof finish).
9. BOWED JOINT (to attach the thigh-socket in certain cases).
10. CONFINING BAND (wire wound tightly around the leg, to strengthen and prevent splitting).
11. STUMP SOCKET—"*Safety Socket*"—(to support a part or all of the weight on the *end of the stump*).

For full information, address the Inventor,

B. F. PALMER, LL.D.,

Studio, No. 39 South 17th Street. Office, 1609 Chestnut Street, Philadelphia.

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Fig. 1.

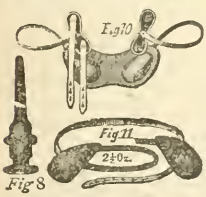

Fig 8

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References by permission:—Dr. D. HAYES AGNEW, Professor of Surgery in University of Pennsylvania; Dr. THOMAS G. MORTON, Surgeon to Pennsylvania Hospital; Dr. W. S. W. RUSCHENBERGER, Surgeon-in-Charge of United States Naval Hospital, and others.

The Children's Seashore House, Atlantic City,

Under the charge of Dr. WILLIAM H. BENNETT, will be open from June 13th until about September 15th.

It is designed for the treatment of invalid children of both sexes, without regard to creed, color, or nationality.

Any child suffering from a non-contagious disease, or from debility, and likely to be benefited by a short residence at the seashore, can be admitted.

Applications for admission will be received in Philadelphia by the Examining Physicians, Dr. J. V. INGHAM, 1342 Spruce Street, and Dr. B. J. RUDDEROW, 552 East Dauphin Street, Monday, Wednesday, and Friday afternoons, *between 2 and 3 o'clock.*

A charge of Two Dollars per week is made, but a limited number of free and partly paid patients will be received, subject in each case to the approval of two managers. Charges are payable in advance. Special rates will be made for children from institutions.

Tickets to and from Atlantic City are furnished to patients and their attendants at extremely low rates.

Accommodations have been provided for mothers with nursing children. Each mother will have for herself and child the exclusive use of a little cottage near the beach. The whole charge for a mother, with either one or two children, will be three dollars per week.

The length of time which each child remains in the Institution is determined by the Physician, in accordance with the necessities of the case. As it often does not exceed two weeks, vacancies are constantly occurring, and are at once filled from the list of applicants in the order of their application.

Physicians are cordially invited to visit the Institution, and make it known to such of their poorer patients as may need its benefits.

Visitors are admitted daily between 3 and 5 o'clock P.M.

Contributions for the support of the House may be sent to either of the following members of the Board of Managers:

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THE REGULAR SESSION will commence on Wednesday, September 27, 1876, and end about the 1st of March, 1877.

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FORDYCE BARKER, M.D., Professor of Clinical Midwifery and Diseases of Women.

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WILLIAM M. POLK, M.D., Professor of Materia Medica and Therapeutics and Clinical Medicine.

AUSTIN FLINT, Jr., M.D., Professor of Physiology and Physiological Anatomy, and Secretary of the Faculty.

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The Spring Session consists chiefly of recitations from text-books. This term continues from the first of March to the first of June. During this session daily recitations in all the departments are held by a corps of examiners appointed by the regular faculty. Regular clinics are also given in the hospital and college building.

FEES FOR THE REGULAR SESSION.

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FEES FOR THE SPRING SESSION.

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Dissection (ticket good for the following winter)	10.00

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H. LENOX HODGE, M.D., Demonstrator of Anatomy.
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